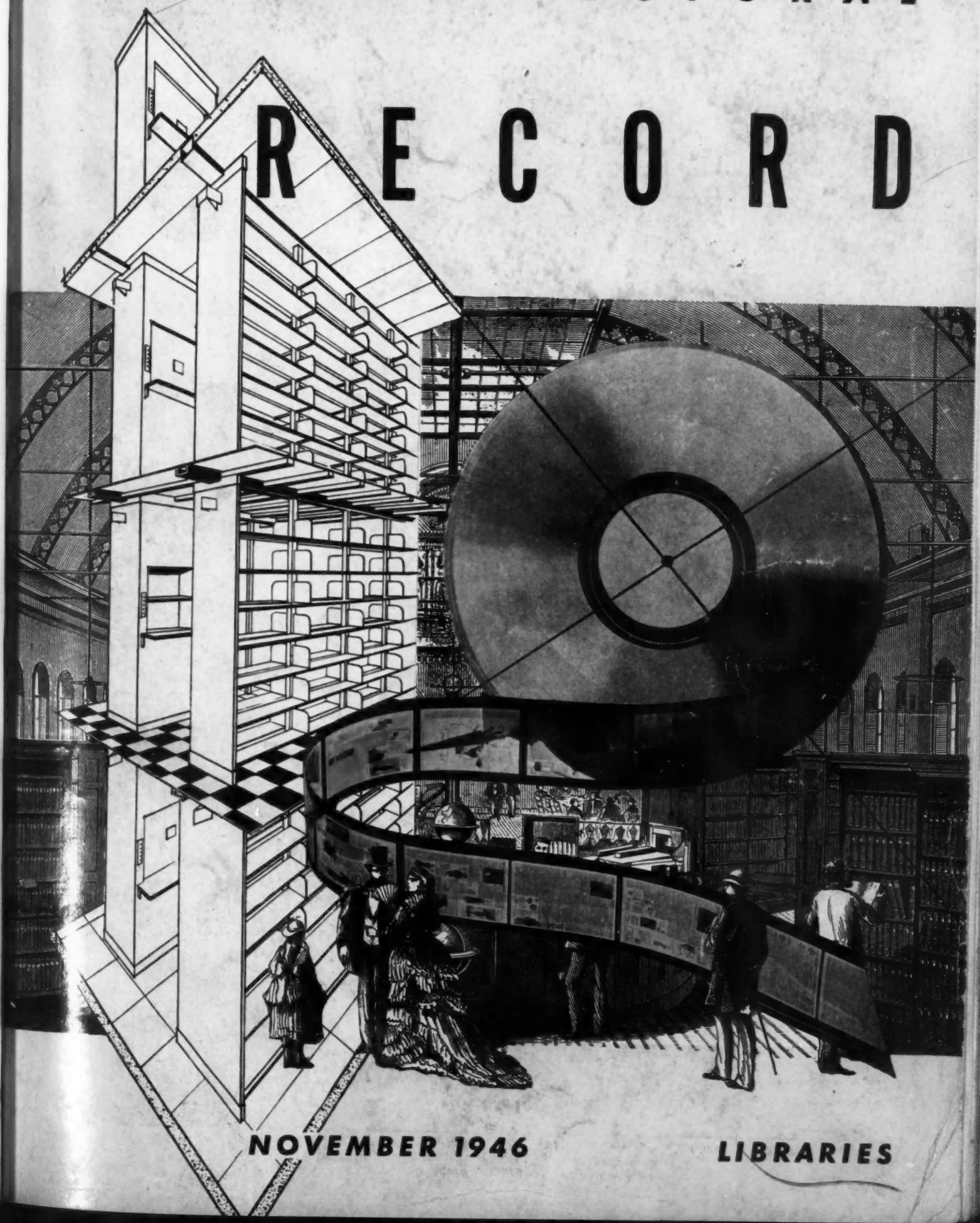
ARCHITECTURAL RECORD



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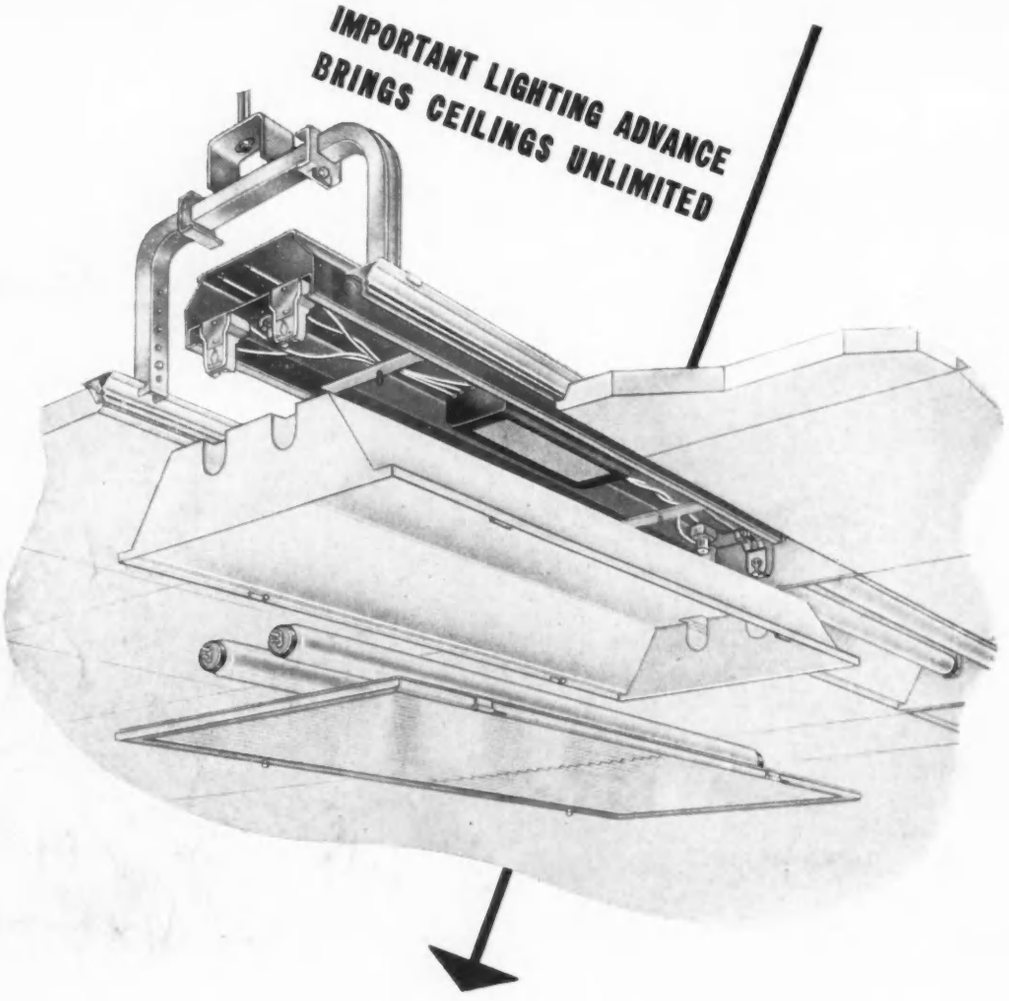

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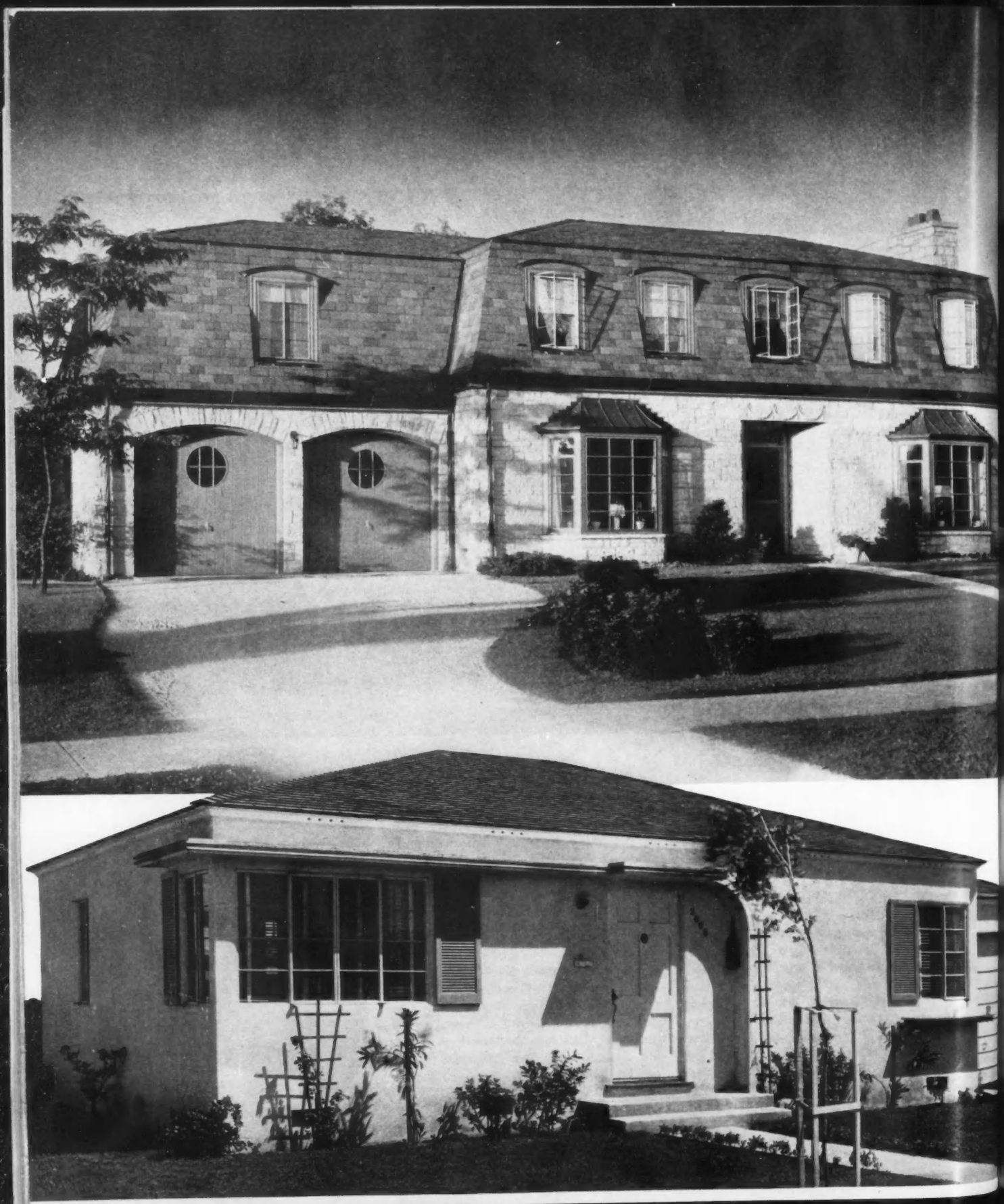

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VOL. 100 • NO. 5 November 1946

ARCHITECTURAL RECORD

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WHEN CEILINGS DISAPPEAR! 71
An Editorial . . . by Kenneth K. Stowell

AUDIO-VISUAL DEPARTMENTS 72
Eyes and Ears in School. Continued from February, 1946

BRANCH BANK IN ROCKEFELLER CENTER 80
Bankers Trust Company, 51st Street and Rockefeller Plaza, New York. Shreve, Lamb and Harmon Associates, Architects

HOUSES 84
Residence in California. Harwell Hamilton Harris, Architect 84
Residence in California. Gregory Ain and George Agron, Designers 86
Three Residences in Arizona. Arthur T. Brown, Architect 88
Residence in Texas. Fehr and Granger, Architects 90

HOUSES OR POLITICS? 92
The Factors that Determine the Volume of Construction. By Thomas S. Holden

ECONOMISTS FORESEE END OF PRICE INFLATION IN 1947 . . . 96

BUILDING TYPES STUDY NO. 119 . . . UNIVERSITY LIBRARIES . . 97

TECHNOLOGY MADE HUMAN 99
Proposed Library for Massachusetts Institute of Technology. Voorhees, Walker, Foley & Smith, Architects

THE "MODULAR" LIBRARY 109
Proposed Library for University of Iowa. Keffer & Jones, Architects and Engineers

BIBLIOGRAPHY ON UNIVERSITY LIBRARIES 114

ARCHITECTURAL ENGINEERING . . . Technical News and Research . . 115

LIBRARY CONSTRUCTION FOR INTERCHANGEABLE USES 115

AIR CONDITIONING FOR BOOKS AND PEOPLE 117
By Harold L. Alt, Heating Engineer

WHAT ABOUT MICROFILM "AND SUCH?" 118

LIGHTING IN LIBRARIES 120

SOUND CONTROL IN LIBRARIES 121
By Edward Content, Acoustical Engineer

PRODUCTS . . . For Better Building 122

TIME-SAVER STANDARDS . . . Library Bookstack Data 125

MANUFACTURERS' LITERATURE 130

THE RECORD REPORTS . . . News from the Field 7

REQUIRED READING 26

INDEX TO ADVERTISEMENTS 194

COVER: Background print, courtesy The Bettmann Archive

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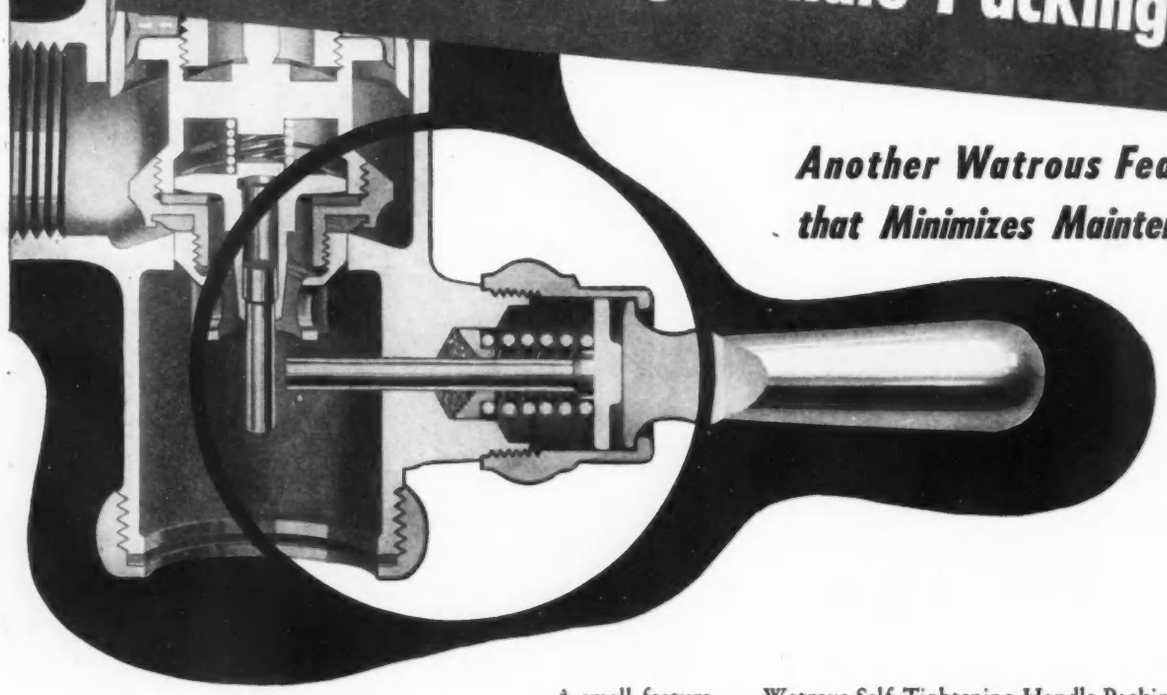

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THEY PAY FOR THEMSELVES IN THE WATER THEY SAVE

Watrous Flush Valves

THE RECORD REPORTS

Construction Hits Record High—but so does Demand for Housing • Materials Shortages Promised for 1947 • Justice Department Comments on Recent Labor Cases

Regardless of the November election upsets, federal officialdom looks for a fresh furore over housing when the new Congress takes its seat. Not only have the efforts to provide houses for veterans been hobbled by obstacle after obstacle, but also the general housing bill, after a Senate o.k., died in the House last July and is due for resuscitation early in 1947.

Few observers, however, expect swift progress, for an incoming Congress takes a month or more to get organized and into full swing. For one thing, committee assignments must be reshuffled, and regular legislative steps await this procedure.

Record Highs Hit

Despite handicaps met by Housing Expediter Wyatt, his program for residential construction claimed some record highs — began to do so back in August when expenditures for new construction passed the billion dollar mark (Department of Commerce figures) for the first time since the war month of November, 1942. Housing accounted for $355 million. Lumber production kept high and gypsum board and lath output reached the highest point in history.

Special point of the rapid expansion of building materials was made by CPA Chief Small. To use his words:

"This record of achievement has probably never been surpassed in the history of building materials production over a comparable period of time. Indeed, it compares most favorably with the rates of production increase on military production programs of high urgency achieved during the war period. The record is a tribute to the cooperation of building materials producers and workers with the government program."

Demand Is at Peak

On the other hand, the housing demand was hitting its peak. A census survey reported four million veterans wanting to rent, buy or build. Reconversion Director Steelman warned that "the over-all shortage is so acute that even if the program in 1946 is to succeed, there will still be as many people in need of housing at the beginning of 1947 as there were on January 1, 1946."

Incidentally, very few federal works projects have been given the go-ahead sign. Last August 6, it will be remembered, the Reconversion Office ordered into effect a moratorium on all new construction in this field, except veterans' hospitals and like *must* items. Although this moratorium was to end with September only such programs as got clearance from the Civilian Production Administrator and the Housing Expediter could be started before next April 1. State and local governments were asked similarly to defer public works.

Shortages Continue

Obstacles to the housing program include not only the much talked of shortages in materials and labor. Indirect hobbles are showing up, eminent among them the scarcity of freight cars. In the Pacific northwest some lumber mills were forced to shut down, reports Reconversion Chief Steelman — they could not move boards already sawed.

Building material shortages will not end with the current year, predicts the Commerce Department. It cites prospective limited supplies for lumber, cast iron soil pipe and plumbing fixtures during 1947. On the other hand, it says, brick, tile, concrete block, clay sewer pipe, warm air furnaces and cast iron and convector radiation are being produced in sufficient quantity to bring supply into a balance with demand.

CD's Construction Division advises that lumber exports have been declining steadily during 1946 and are at lower levels than in 1939. "Until 1941," it states, "we normally exported more lumber than we imported, but since then our imports exceed the exports. It is estimated that during 1946 our imports will be twice the exports, and that 70 per cent of the imports will be in species, sizes and grades usable for residential construction while 75 per cent of our exports will not be usable for residential construction needs."

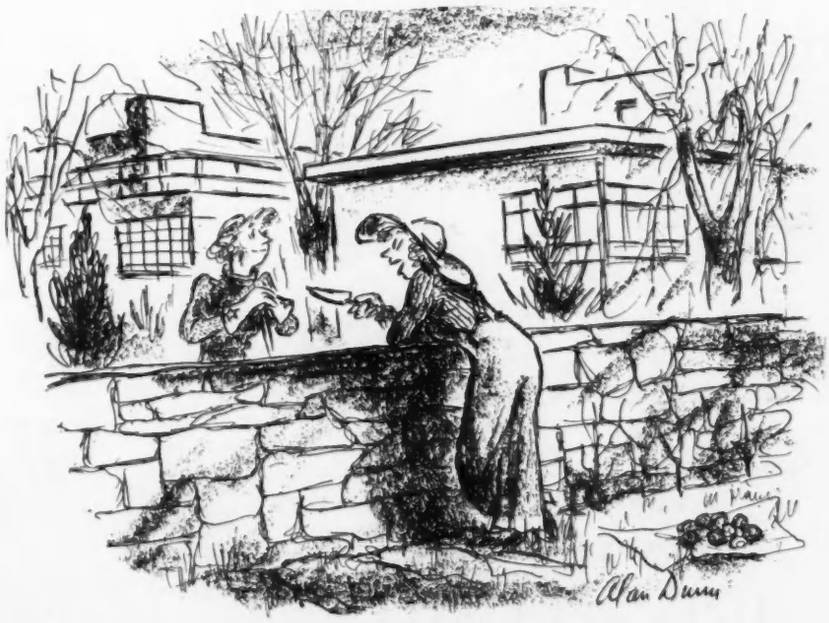
In this connection the Lumber Survey Committee draws some interesting conclusions in a report to the Secretary of Commerce. Discussing the distribution of lumber, it advises that many industrial users are seeking to buy up sources of supply, and continues:

"Distribution yards, unable to obtain lumber from their usual suppliers are frequently attempting to acquire control over mills. Mills, on the other hand, are commonly setting up their own distribution outlets, not because of unwillingness to sell to traditional distributors, but because mill controlled distribution is deemed more profitable to the producer under existing price regulations. The confusion and unrest in the industries have been increased by a marked tendency toward avoidance of ceiling prices and restrictions and also continued evasion of price and distribution control regulations."

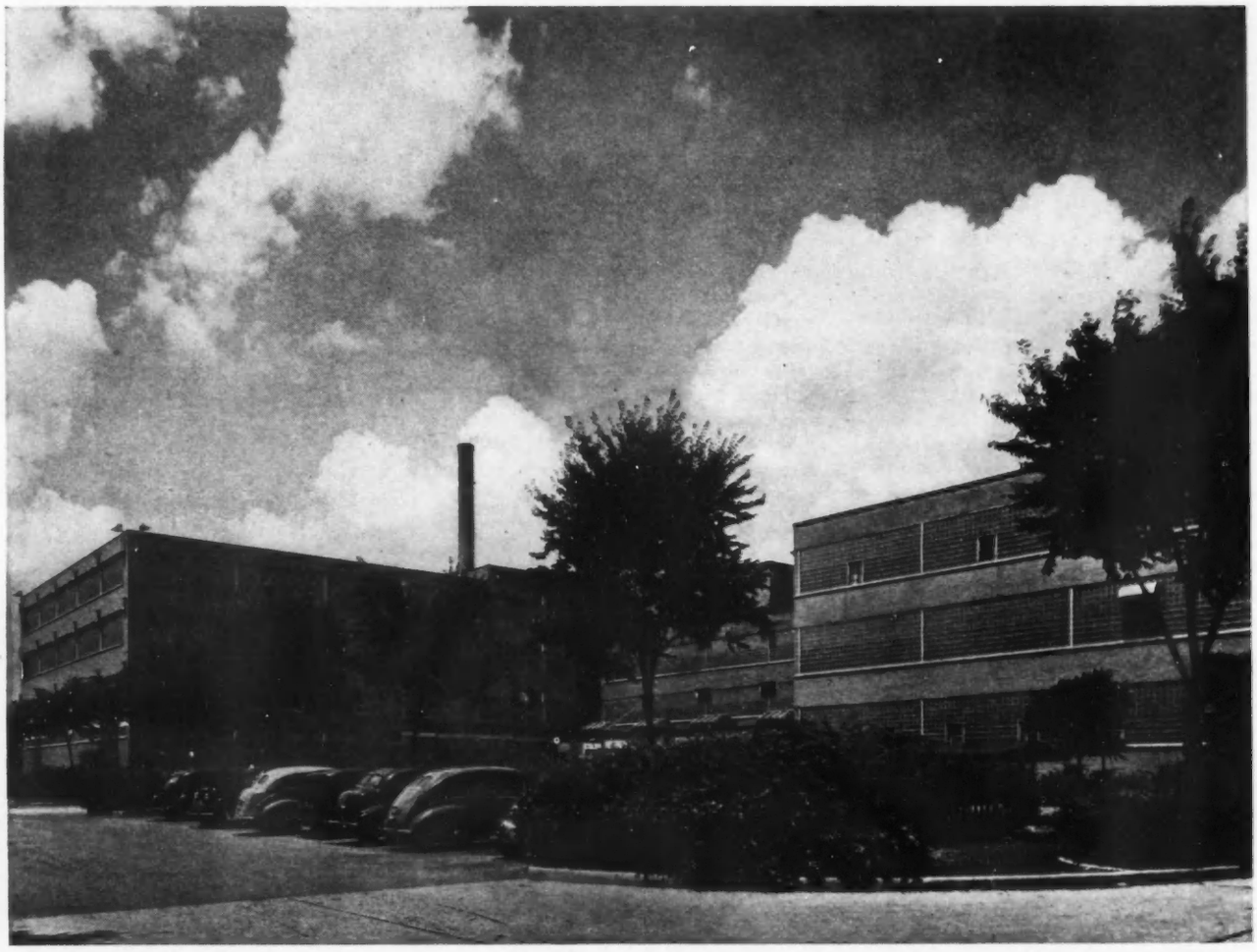
Construction Estimated

Inter-agency construction estimates for 1946–47 have been released by the Commerce Department with the ex-

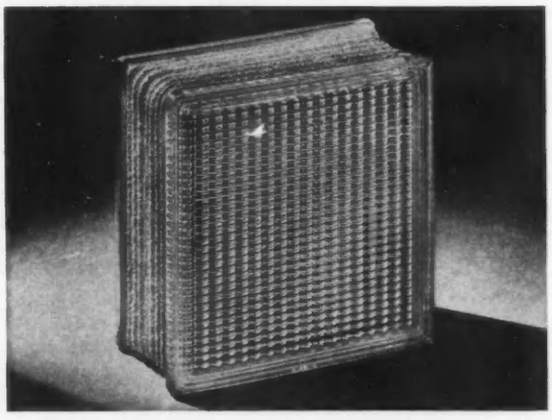
(*Continued on page 10*)



"Let me tell you what happened in their All-Purpose room . . ."
— Drawn for the RECORD by Alan Dunn



Seven-foot high continuous panels of Insulux Glass Block usher in daylight to all three floors of Miles Laboratories, Elkhart, Ind. Important to this manufacturer of proprietary medicines is the diffusion of daylight through wide working areas, spotless appearance, and high insulating value. Clear windows are set in some of the Insulux panels for vision out and ventilation.



Insulux Glass Block is a functional building material—not merely a decoration. It is designed to do many things other materials cannot do. Investigate!

OWENS-ILLINOIS

INSULUX

GLASS BLOCK

Glass harness for daylight

Daylight—in harness—opens a host of architectural opportunities, and this control is easily realized with Insulux Glass Block.

Natural daylight can be diffused evenly through a horizontal plane or the direction of light rays can be changed. Distracting views are eliminated, privacy assured. Infiltration of outside noise is materially reduced.

Insulux helps maintain controlled conditions of cleanliness and sanitation—stops air leaks around ill-fitting openings. Also, the insulating properties of Insulux give lower cost air conditioning and heating operations. Condensation of the room side of panels is much less than on a single glazing.

These qualities merit careful consideration in any structure where natural daylight under close control will give better working conditions or improve livability.

Technical data, specifications and installation details will be found in the "Glass" section of Sweet's Architectural Catalog, or write Dept. C-11, Owens-Illinois Glass Company, Insulux Products Division, Toledo 1, Ohio.

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with this Proven Reinforcement

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Tennessee Coal, Iron & Railroad Company, Birmingham
Southern Distributors
United States Steel Export Company, New York

UNITED STATES STEEL

THE RECORD REPORTS (*Continued from page 7*)

planation that they represent, not forecasts of construction activity, but rather "a statistical measure of the dollar volumes of construction which would be put-in-place in the period under review under existing programs, schedules and controls, if materials and labor are available to support such levels." They are designed to serve as a "basis for and guide to policy decisions."

For 1946 these estimates (prepared jointly by the Civilian Production Administration, Department of Commerce, Department of Labor, Federal Works Agency and National Housing Administration) list programmed construction at $15.8 billion, with new building at $10.7 and maintenance and repairs at $5.1. For next year programmed activity reaches $19.2 billion, of which $13.18 is new and $6.07 is for maintenance and repairs.

The 1947 residential total is programmed at $7.12 billion compared to $4.63 this year. Highway schedules go up from the 1946 estimate of $659 million to $1 billion. A more sizable jump, however, is for prefabricated dwellings, the 1946 figure being $343 million and next year's $2.46 billion.

Broken down by quarters, the 1947 total construction estimates show $3.68 billion for the first quarter, $4.77 for the second, $5.75 for the third and $5.04 for the fourth. New construction is put at: 1st quarter, $2.58; 2nd, $3.17; 3rd, $3.85; 4th, $3.57. (F. W. Dodge Corporation estimates are being compiled as this is written, will soon be released.)

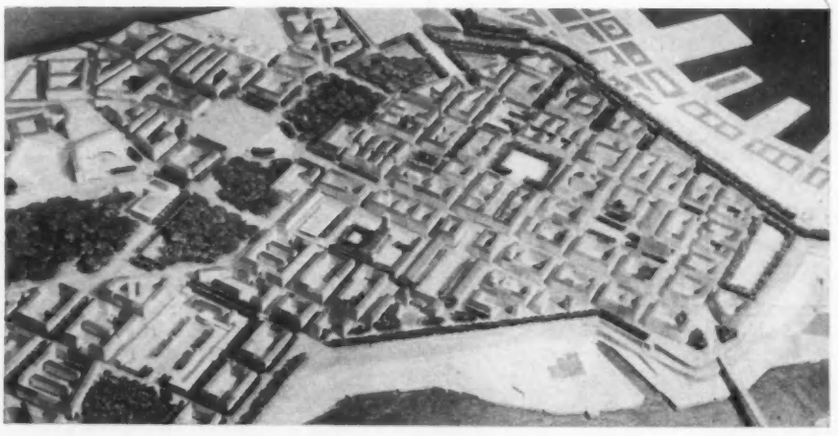
Anti-Trust Report

The Senate Small Business Committee recently issued a report on anti-trust cases in the construction industry, touching on control of production and prices by means of patents, restraints in lumber, cement, plumbing and heating, etc.

The Justice Department, which drew up the report, includes in its discussion pertinent comment on labor cases:

"In 1939, 1940, 1941 the Department brought a number of cases against labor unions for alleged violations of the anti-trust laws. At the outset we made it clear that we were not attacking any of the legitimate activities of labor unions such as the right of collective bargaining or activities designed to raise wages, reduce hours, and improve working conditions. We recognized the limited liability of unions under the Clayton and Norris-LaGuardia Acts for activities which, but for the exemptions granted by these two acts, would constitute violations of the Sherman Act. Our program was based upon union activities which, in our judgment, went beyond the exemptions granted labor-union activities by the Clayton and Norris-LaGuardia Acts. The activities attacked were: (1) jurisdictional strikes, particularly those in which one union struck against another union which had been certified by the National Labor Relations Board as the legitimate collective-bargaining agency with whom the employer should deal; (2) strikes to erect tariff walls around a particular locality; (3) refusal to work on and install prefabricated materials; (4) made work, including the transfer of work from one labor group to another, as well as requiring the performance of more work than that reasonably necessary to complete a job; and (5) agreements between employer and labor groups to fix prices on building materials. These latter agreements were enforced usually by refusal of the unions to work for manufacturers or contractors who would not join the price-fixing arrangement. Under such arrangements, the particular unions involved became the exclusive labor supply for the manufacturer group.

"The Department lost almost all the cases in the first four groups, the courts holding that as long as the unions acted in their own self interest, and did not combine with non-labor groups, their activities were immune from prosecution under the Sherman Act although trade and commerce be restrained. In the fifth group, the Courts held generally that the unions were liable if they aided and abetted employer groups to achieve market and price control even though the union's purpose in entering the combination related to terms and conditions of employment."



Reconstruction plans for Brest, France's largest prewar naval base, call for six new developments, accommodating 25,000 people, and careful grouping of public buildings

FRANCE REBUILDS

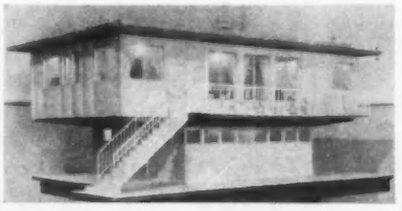
On view at the American Museum of Natural History, New York, through the balance of this month is an especially interesting exhibit, "France Comes Back," sponsored by the Provisional Government of the French Republic.

The exhibit, which details the story of France during three wars and presents plans for her reconstruction during the coming years, includes a number of architectural models showing the trends in postwar French design and city planning.

One of the models is of Sully-sur-Loire, almost wholly destroyed in 1940. Plans for its reconstruction are based on a determination to keep the quaint beauty and follow the general pattern of the old town, while modernizing its appearance with wider streets and a more general openness.

Another of the models is of Laon, whose fortified old section on the hilltop is still intact, although the lower section of the town was wiped out. This lower section is being rebuilt as a thoroughly modern garden city.

Also included in the exhibit are panels of photos showing emergency housing developments and prefabrication systems.



Living unit of this prefab by Marcel Lods is on second floor, service unit is on first

NHA Issues Data

In its active push for veterans' housing, the National Housing Agency comes up with numerous data of concern. Among recent actions and findings, note these:

1. Under the veterans' program, builders' plans reveal that in the new conventional houses gas fuel heating systems

(*Continued on page 12*)

HERE TO STAY!

Reynolds Lifetime Aluminum Clapboard Siding going up on a typical veteran's home. Note the precision of line — with no leveling off. Note the butt joint, on the fourth clapboard from the top.

REYNOLDS *Lifetime* ALUMINUM BUILDING PRODUCTS

THERE'S *permanency* in Reynolds aluminum building products . . . permanence in public acceptance as well as in the material itself. Immediate availability, in this housing shortage, is only one advantage. The public knows what it means to have absolutely fire-proof, rust-proof roofing and siding—impervious to rot, vermin and termites — lightweight and structurally strong. Farmers appreciate the fact that aluminum needs no protective coating—eliminating maintenance cost. Homeowners who prefer their houses painted are finding that aluminum holds paint longer—looks better, with less upkeep. And all alike are learning the great advantage of aluminum's *radiant heat insulation*—the fact that an aluminum surface reflects up to 95% of all radiant heat, reflects it outward in summer, inward in winter.

Reynolds Aluminum is here to stay in the building products field. The car-loads now being shipped, the houses now going up, are but the forerunners of a modern trend as important for dealers as for architects and contractors. Ask your regular supply source now about Reynolds Lifetime Aluminum Building Products. Distribution is through usual building trade channels.

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Building Products Division **Louisville 1, Ky.**

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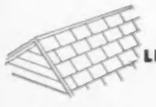
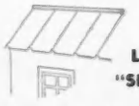


REYNOLDS LIFETIME ALUMINUM SHINGLES

Sheet thickness .027″. Watertight interlocking flanges. Nails completely covered. Coverage, 8″ x 14½″. Shadow line, ¼″. Accessories: Eave Starter, Ridge Cap, Gable End Cap, Hip Cap and Valley.



REYNOLDS LIFETIME ALUMINUM "SNAP-SEAL" ROOFING

A new Reynolds-engineered product with watertight interlock between sheets. All nails covered. Accessories: Eave Starter, End Starter, End Wall Flashing, Gambrel Joint, Ridge Roll, Formed Valley. 6, 8, 10 and 12-foot lengths, 24″ coverage.

REYNOLDS LIFETIME ALUMINUM WEATHERBOARD SIDING

.027″ thick sheet, crimped in simulation of 4″ clapboard—which effect can be enhanced by painting. 8, 10 and 12-foot lengths. 24″ coverage. Easily erected in horizontal strips, 10 feet weighing only 11 pounds.

REYNOLDS LIFETIME ALUMINUM CORRUGATED ROOFING AND SIDING

.027″ thick. Either 2½″ x ½″ or 1¼″ x ¼″ corrugations. 6, 8, 10 and 12-foot lengths, 24″ coverage. Accessories: Ridge Roll, Formed Valley, Roll Flashing.

REYNOLDS LIFETIME ALUMINUM S-V CRIMP ROOFING AND SIDING

.027″ thick, superior in appearance and efficiency. 6, 8, 10 and 12-foot lengths, 24″ coverage. Accessories: Ridge Roll, Formed Valley, Roll Flashing.

ALSO Reynolds *Lifetime* Aluminum STUDS, TRUSSES, WINDOW FRAMES, GARAGE DOORS AND A COMPLETE 12′ x 20′ UTILITY BUILDING

Quick On The Draw!

At-the-Source Removal Solved This Industrial Ventilating Problem

Industrial ventilation frequently can be simpler—and *far* more effective—when heat, fumes, moisture, and dust are not permitted to *spread.*

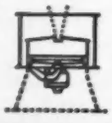
A good example is this installation at Midwest Rubber Reclaiming Co., East St. Louis, where several Propellair Verti-Stacks each draw heat and fumes from three or four mills, exhausting *high* above the roof.

Midwest bought their first Propellair 12 years ago; now have over *one hundred.* Replaced is a 10-h.p. blower which formerly exhausted from four mills. Verti-Stacks do a better job at a *fraction* of blower power costs.

In Verti-Stacks, ducts, walls, and windows, modern Propellair "pull-push" fans are *marvels* for air movement. You'll like the way they simplify layouts; the way they perform; and the engineering assistance you get from Propellair. We'll be glad to give you the facts.

"MOVING AIR IS OUR BUSINESS"

VERTI-STACK. A sturdy, power roof ventilator with butterfly dampers that open wide the instant fan is started; offer virtually zero resistance as discharge shoots high into air; close automatically; won't leak.

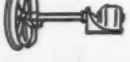


TYPE CD

TYPE CSB

TYPE CS

TYPE CE



TYPE CU

TYPE CM

PROPELLAIR, Inc.

SPRINGFIELD · OHIO

THE RECORD REPORTS

(*Continued from page 10*)

take the lead. An analysis indicates that 52 per cent will use gas, 27 per cent coal and 21 per cent oil. Further, 33 per cent use overflow heaters, including floor furnaces, wall furnaces and space heaters; 25 per cent use gravity warm air systems; 25 per cent forced warm air systems, and 17 per cent steam and hot water.

2. Roughly 150 items of building materials and equipment have been placed under export control by the Commerce Department by NHA suggestion.

3. Priority aid to manufacturers of wood-working machinery has been made part of the housing program. Surplus machines have been channeled to plants producing for home building.

4. CPA has enlarged its enforcement staff for priority regulations and set asides of materials for home building and to prevent unauthorized construction.

5. Arrangements were made for draft deferment of skilled construction workers when their loss would delay home building.

6. At least half of the $2 billion mortgage authorizations under the Veterans Housing Act had been tentatively allocated for rental housing by early fall, covering about 150,000 units.

7. The War Assets Administration withheld from sale 50 surplus plants in 22 states for a period of three months so that companies producing for home building could submit purchase requests and thus avoid use of critical materials in new plant construction.

8. NHA continues its efforts toward a large volume of rental housing construction. Estimates from the 64 issuing offices of Federal Housing Administration show a total of more than 325 probable projects including about 36,000 dwelling units. These, taken in conjunction with actual August applications, indicate a prospective construction of at least 42,000 units, FHA reports. In this connection, FHA has issued a new brochure on rental housing which embraces a full scale study of basic procedure, such as planning, investment prospects, use of FHA credit facilities, architectural considerations, rents, taxes, mortgage terms, etc.

9. Arrangements were made early in the fall for priority assistance to any home owners for heating or plumbing supplies needed for emergency repairs.

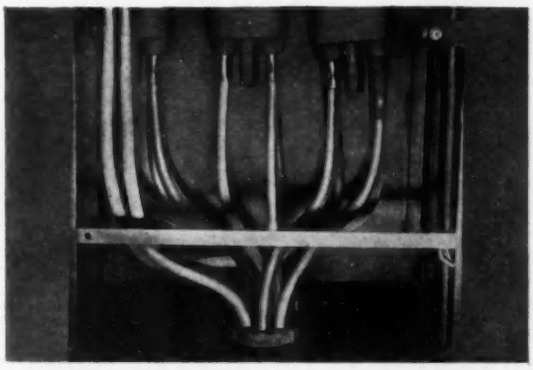
10. Wire nail manufacturers met with government representatives in October to work out problems on production and distribution of nails with attention to a premium payment plan on production beyond established quotas.

(*Continued on page 14*)

WIRE and CABLE USERS

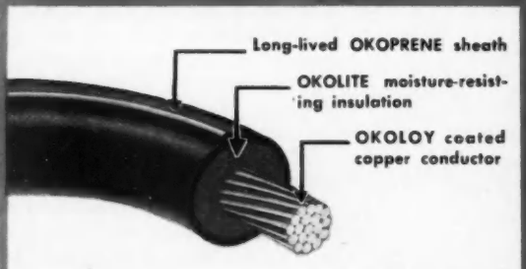
WROTE OWN "SPECS" for RESEARCH LABORATORY

Before equipping their new and completely modern laboratory, the engineers of a world-famous research organization decided to write their own specifications. Drawing on the extensive experience and test results of their own, they called for wires and cables insulated with an oil-base compound protected by a sheath of neoprene. *They knew what they wanted:*—wiring that would resist flame, moisture, heat and chemicals. *They GOT what they wanted:* — Okolite-Okoprene* cables shown in pictures below. The job is described in Bulletin OK2035, the cable in Bulletin OK2009-C both available on request. The Okonite Company, Passaic, N. J.



Connections for one of three 208-volt ring mains in cellar of laboratory at low side of 4150 volt distribution transformer. The 4/0 Okolite-Okoprene cables are colored blue, red and black for phase identification.

Taps being made in 3' x 3' distribution manhole. Exposed section of conductor and connector insulated with Okonite splicing materials. Okolite-Okoprene cables were specified for tough, damp locations.

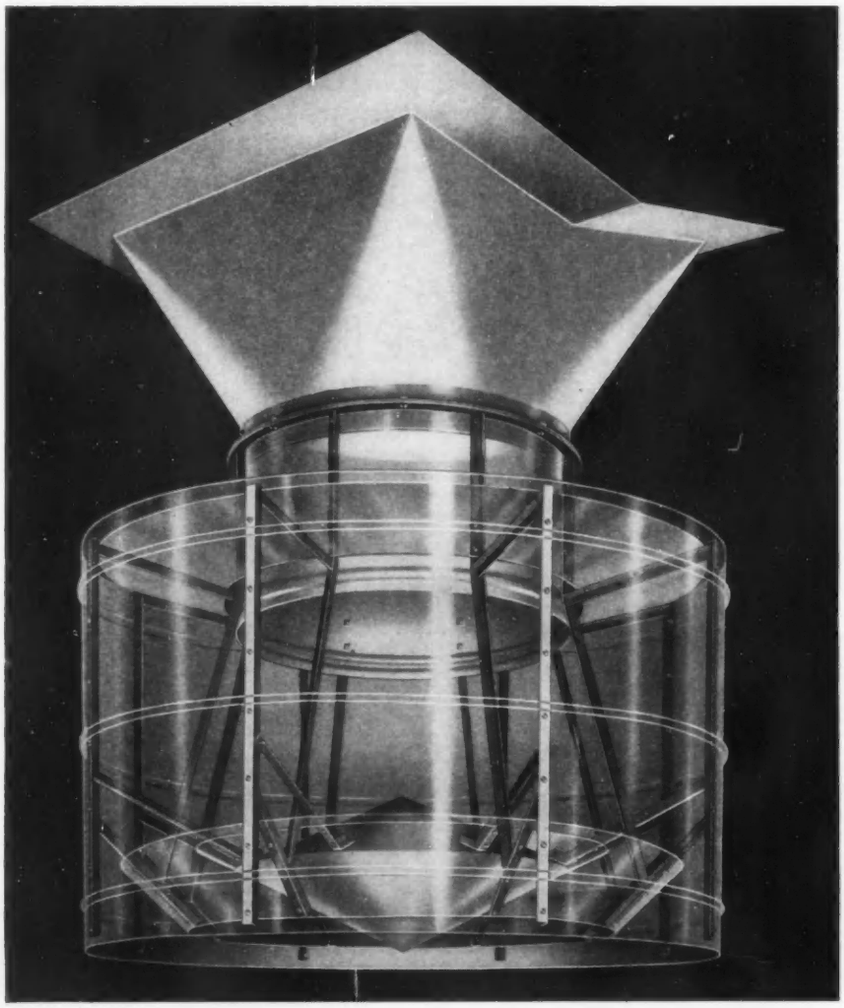


OKOLITE-OKOPRENE cables offer such additional advantages as:— no braids to rot . . . simple, flexible, long-lived construction . . . tough weather-resistant jacket of uniform thickness requiring no other covering . . . high surface resistance that eliminates surface discharge . . . 75°C operation.

OKONITE RUBBER TAPE AND MANSON FRICTION TAPE offer a combination known the world over for dependable protection and high quality in jointing and splicing operations. Okolite High Voltage Corona-Resisting Tape and Okonite Cement help round out a complete line of tapes and splicing materials. For additional data, write for Bulletin 1007.

*U S. Pat No. 2,312,058

OKONITE insulated wires and cables



The BURT Free-Flow Gravity Ventilator Does a Tremendous Air-Moving Job, *because*—

Its design reduces to a minimum the factors that limit the capacity of stationary ventilators. Among its features is upward vertical discharge to eliminate reduction of velocity of discharge and to protect the roof from condensation of moisture directly beneath the ventilator . . . Absence of internal louvers that block discharge and reduce capacity . . . An airflow direction cone that eliminates the trap caused by the conventional ventilator top and prevents turbulence in the head . . . Unusually large windband that creates a far greater low pressure area with a suction effect from passing winds to greatly increase capacity of the unit . . . Larger, heavier braces to withstand extremely high wind velocities . . . And no moving parts to ever get out of order. For complete details see Sweet's or write for catalog and data sheets.

WRITE FOR CATALOGS AND DATA SHEETS

The **BURT MFG.** *Co.*

48 E. South Street **Akron 11, Ohio, U.S.A.**

MANUFACTURERS OF VENTILATORS, LOUVERS
OIL FILTERS AND SHEET METAL SPECIALTIES

THE RECORD REPORTS

(*Continued from page 12*)

WHAT THEY SAY . . .

About Housing

"We shall be building the slums of tomorrow before we have solved the tremendous problem presented by the slums of today. . . . The effort to produce housing within present price limitations in the face of existing material shortages and high construction costs will inevitably result in makeshifts and jerry-building. Perhaps nothing can be done about this situation now because housing of any kind is critically needed. . . . We can begin now, however, to plan for the time when we shall no longer be forced to rely on makeshift expedients and when we shall be able to begin the orderly rebuilding of our cities, recognizing that the scope of the problem has been greatly enlarged by the poorly built homes being erected during the present emergency. In order to develop a program of action that incorporates the considered judgment of members of the several planning professions, the American Institute of Architects is inviting several other national organizations to join in the preparation of a workable plan for urban reconstruction which will reflect the desires of all of the participating professions." — LOUIS JUSTEMENT, *Chairman, Committee on Urban Planning, A.I.A.*

"We need rental housing, but how can we expect a great volume of it when ceiling rents make new buildings worth less than they cost to build? We have usually found that rental property is worth about 100 times the monthly rent produced. Rent control arithmetic . . . is trying to make building costs of 154 times monthly rental income look sound, but that kind of figuring is not likely to produce an abundance of rental housing." — BOYD T. BARNARD, *President, National Association of Real Estate Boards.*

"Reports from all parts of the country indicate that the veterans' emergency housing prgram formulated by Chester Bowles and Housing Expediter Wyatt is even further behind schedule than Mr. Wyatt's own pessimistic reports have revealed. The answer to the housing shortage and other problems does not lie in a new pyramid of federal controls, nor in a hodge-podge of new legislation dictated by bureaucratic officials. It has become perfectly obvious that the construction industry itself will have to point the way out of the housing fiasco. The government program has been a tragic failure." — DOUGLAS WHITLOCK, *Chairman, Advisory Board, Producers' Council.*

(*Continued on page 16*)

walls and ceilings of w-
red with FABRON or equal, acco-
cted by the Architect. OMIT
to which the material is to be applied are t
in a smooth, level surface; cracks to be cut

FABRON HAS NO EQUAL
THERE IS NOTHING LIKE IT

for the finish of Walls and Ceilings of rooms in all types of buildings, especially HOTELS, HOSPITALS, SCHOOLS, INSTITUTIONS, ETC. where the walls are subjected to hard usage and where ECONOMY — based on initial cost, simple maintenance and durability — is essential and where a **permanent** finish that is **decorative** in color and design is desired.

A bold statement — that's true! Alright — here are some of the manifold advantages of this canvas-plastic-lacquer material. Decide for yourself if it is correct to say that it "has no equal."

HOTELS

HOSPITALS

fabron — THE modern functional Wall Finish

- completes the structure
- decorates the wall permanently
- reinforces sub-surface materials
- strengthens weakened plaster
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- resists scuffing
- is easy to install — easy to clean
- its colors are sunfast
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- it reduces the cost of maintenance
- its permanency makes it the most economical finish for walls and ceilings

fabron is available in solid colors, textural effects and all-over repeating patterns to conform to the purpose of the room and to meet various decorative needs.

Further information will be sent you on request.

fabron spells long range economy — a *permanent* reminder of the wisdom of your recommendation.

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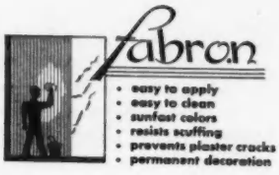

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Address.....

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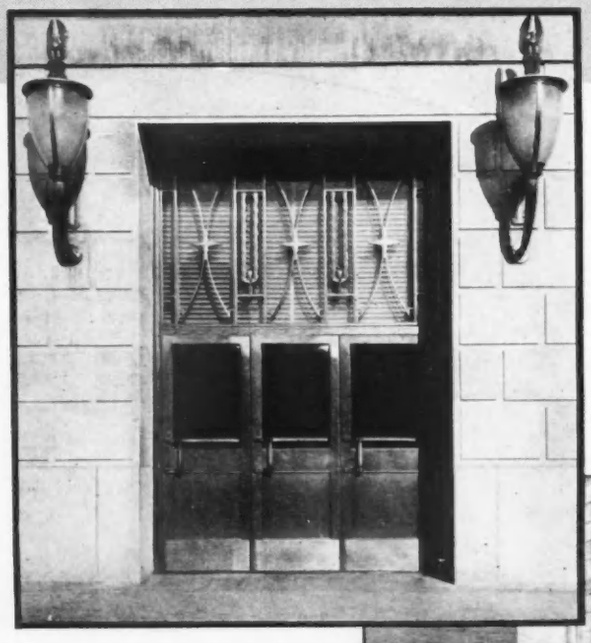
Don't Overlook

MICHAELS PRODUCTS
in Your Building Plans



The manufacture of ferrous and nonferrous metal building products has always been a major part of our business. And now that restrictions are lifted, and materials obtainable, we offer to architects and builders a variety of bronze, aluminum and nonferrous metal products. For specific requirements Michaels craftsmen will faithfully reproduce in metal the most intricate architectural designs. If your plans include metal products, write us.

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Fixtures for Banks and Offices
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Bronze Casement Windows

THE MICHAELS ART BRONZE CO., Inc., Covington, Kentucky

Manufacturers since 1870 of many products in Bronze, Aluminum and other metals

THE RECORD REPORTS

(*Continued from page 14*)

"Inasmuch as 60 per cent or more of all veterans seeking living accommodations for their families would prefer to rent rather than buy homes, the shortage of new rental units merits the preferred attention of the construction industry and of government officials concerned with housing. Since every aspect of building is closely controlled by the government, it is unlikely that any solution to the shortage can be worked out without governmental action. The failure to build a greater number of rental units is due partly to the scarcity of essential materials, but mainly to the fact that OPA rent control policies discourage investments in rental projects." — J. ERNEST FENDER, *President, Structural Clay Products Institute.*

About Wyatt

"Wilson Wyatt's ability as a salesman, ruefully attested to by the Home Builders, demands a broader field than the prosaic problems of housing. He should go to Europe as the super-salesman of Democracy.

"Building houses is an intricate problem involving assembly of tens of thousands of parts and all sorts of tiresome study of prices and controls. It offers no scope for eloquence and imagination.

"We owe the world a great debt. We must explain to all peoples just what Democracy, which we once had, truly means. A good investment in Democracy abroad might pay sufficient return so that one day we could get it at home.

"Jack Blandford is, according to last reports, selling Democracy in China. The Chinese have apparently not been fully sold as yet, but these things take time. We have to be patient. In any event, we have done our duty in covering the Far East.

"In Europe, however, we have a fine salesman's territory wide open. Think of what Wilson Wyatt could do with cigarettes in one hand and food in the other. He would have a wonderful approach to the customers. They would certainly listen.

"Of course, the real super sale would have to be made in Russia. . . . If Wilson Wyatt could make the sale in Russia, think how all of the problems of the world would be smoothed out! The boys in the State Department could be sent home. We would start in enthusiastically trading tractors for caviar. The PAC would fold up because of lack of foreign support. We could really get back to our own business and our own affairs. What an opportunity!" HERBERT U. NELSON, *Executive Vice President, National Association of Real Estate Boards.*

(*Continued on page 18*)

DESIGNS THAT LAST DESERVE THE PERMANENCE OF STEEL

BUILD WITH STRAN STEEL

A framework of Stran-Steel sets any building apart from others of comparable design. For it imparts an inner value . . . permanence, fire-safety, freedom from warp, sag, rot and termites . . . that safeguards the building investment and enhances the builder's reputation.

Stran-Steel offers unlimited flexibility in design . . . permits the use of the widest variety of collateral materials. Pre-cut to required lengths, the framing members are quickly assembled by welding or by self-threading screws. Other building materials are simply nailed to the frame by means of the nailing groove, a patented feature of Stran-Steel studs and joists.

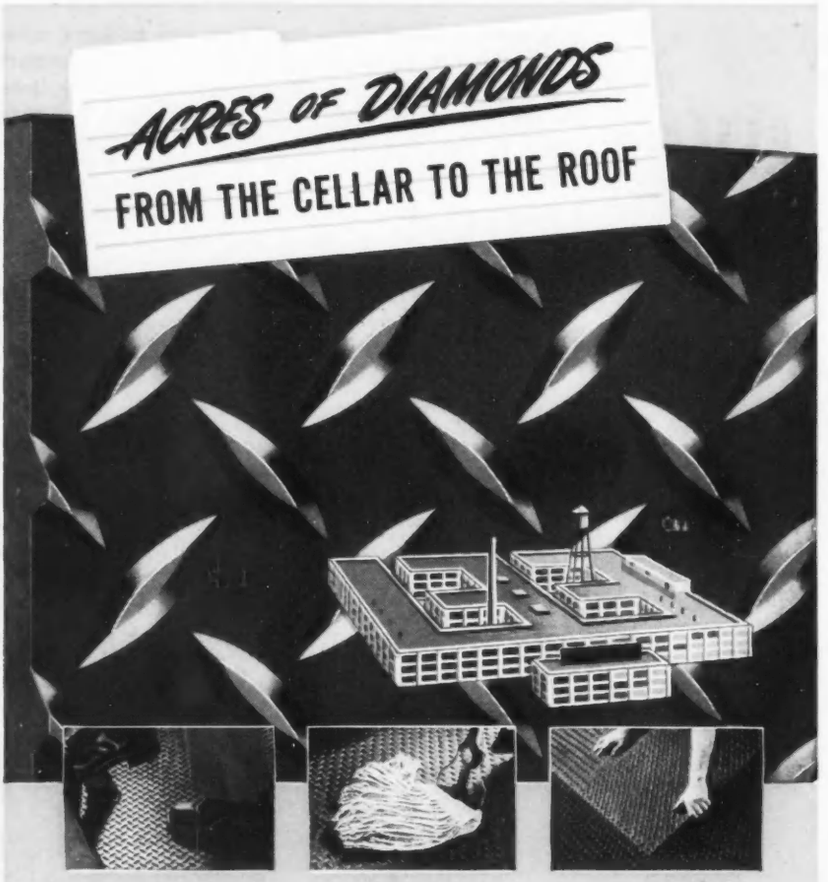
Match good design with good materials. Build with Stran-Steel, the fabricated structural steel for better homes, apartment buildings and light commercial and industrial structures. For further details, see Sweet's File, Architectural, Sweet's File for Builders, or the January issue of Building Supply News.

GREAT LAKES STEEL CORPORATION

Stran-Steel Division • Penobscot Building • Detroit 26, Michigan

UNIT OF NATIONAL STEEL CORPORATION

Stran-Steel framing is a building product of Great Lakes Steel Corporation



GRIP WITHOUT A SLIP! EASY TO CLEAN! EASY TO MATCH!

Wherever you go in both small and large plants you'll find AW Super-Diamond Floor Plates protecting men against costly slipping accidents and giving years of trouble-free service. The exclusive AW Super-Diamond Pattern keeps workers sure-footed under all conditions, even when it's wet or coated with grease or oil. That is why AW Super-Diamond Floor Plate is extensively used for cellar doors, manhole and trench covers, boiler room floors, stairways, loading platforms and similar surfaces. Even the heaviest traffic will not damage it and it is oil, heat and fireproof. Protect your floors from the punishing wear of heavy traffic by putting down AW Super-Diamond Floor Plates now. They can be cut and installed overnight with minimum scrap because the continuous pattern is easy to match.

FREE *A copy of our new 16-page booklet L-33. Write for yours today. Alan Wood Steel Company, Conshohocken, Penna.*

AW SUPER-DIAMOND
FLOOR PLATES THAT GRIP

A Product of **ALAN WOOD STEEL COMPANY**
Other Products: Billets • Plates • Sheets • Carbon & Alloy

THE RECORD REPORTS

(*Continued from page 16*)

PRODUCERS' COUNCIL HOLDS MEETING

Not too encouraging an outlook for the construction industry in 1947 was predicted by the various speakers at the annual meeting of the Producers' Council in New York in September. Labor difficulties, materials shortages and high construction costs came up again and again as problems that must be met if construction is to proceed at estimated and required levels.

Over-all production during July and August and the first part of September, CPA Administrator John D. Small reported, was at high levels and climbing, but substantial further increases "can only come from recruiting additional workers into industry and from increased productivity of present industrial workers." With employment at the record peacetime high of 58 million, the reserve pool of workers has been drained almost to a practical minimum, Mr. Small said, and since women are unlikely to return to industry in large numbers without the patriotic incentive of war, "it looks as though we are not far from touching ceiling on employment." Nor is the manpower shortage confined to the production line, he warned: carpenters, plumbers, plasterers and bricklayers are not easy to find these days. "While I believe it is going to be easier to build a house in 1947 than it was this year," he concluded, "we have many tough problems ahead. The chief trouble spots will be cast iron soil pipe, bath tubs, millwork, hardwood flooring, softwood plywood, pressure pipe, steel and pig iron."

Progress in getting the construction industry reconverted and at work for the civilian economy has been extremely disappointing, Dr. Vergil D. Reed, associate director of research of the J. Walter Thompson Co., commented. "It may take three or four more years before it reaches anything like peacetime capacity," he predicted. "This involves the recruiting, training and organizing of manpower, acquiring plants and equipment and securing dependable sources of materials. In the meantime, the construction industry will need not only better business statesmanship and a common approach to its problems but far better and more constructive public relations to meet and remove the causes for the bitter criticisms which are bound to increase under present conditions. . . . The construction industry can definitely look forward to another year of many troubles and irritations, all the more troublesome and irritating because it is in sight of a tantalizingly rich market — if too many customers aren't

(*Continued on page 138*)

Performance COUNTS

Performance of a drawing pencil counts just as much as the performance of any fine instrument or tool. A pencil needs smoothness, strength and accurate grading. KIMBERLY Drawing Pencils have these "built-in-qualities" and there are 22 fine degrees from 6B to 9H—Tracing degrees 1-2-3-4 and Extra B intense black for artists' layout work. Try them—convince yourself that *Kimberlys will perform.*

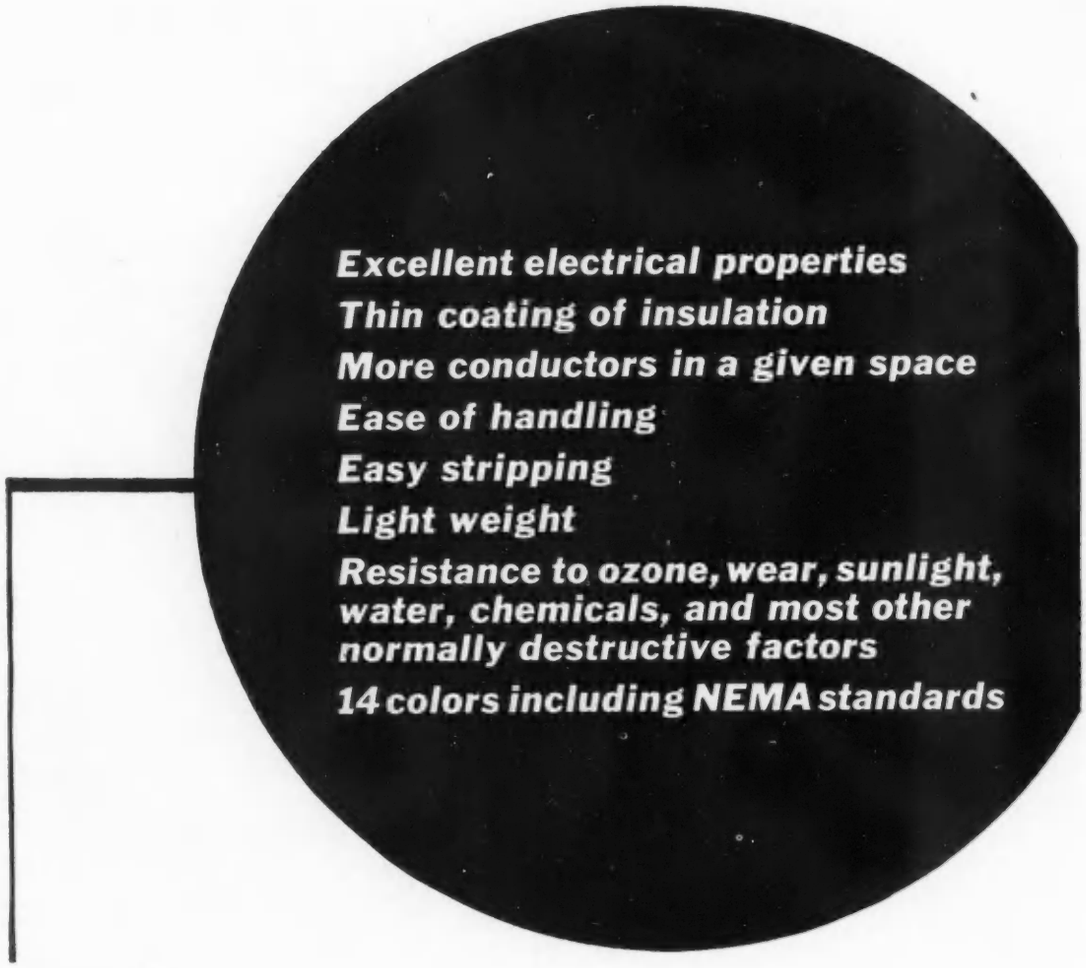
Write to Dept. R for a free trial pencil selecting your favorite degree from the 22 Kimberlys. Mention your dealer's name and address.

(This offer good only within U. S. A.)

KIMBERLY
Carbo-weld
DRAWING PENCILS
22 Degrees

Makers of Fine Pencils since 1889

GENERAL PENCIL COMPANY 67-73 FLEET STREET, JERSEY CITY 6, N. J.


Excellent electrical properties
Thin coating of insulation
More conductors in a given space
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Wire insulation made with GEON has ALL these advantages

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Be sure to specify wire or cable insulated with GEON in order to get *all* these advantages. Or, for information regarding special applications please write Department A-11, B. F. Goodrich Chemical Company, Rose Building, Cleveland 15, Ohio.

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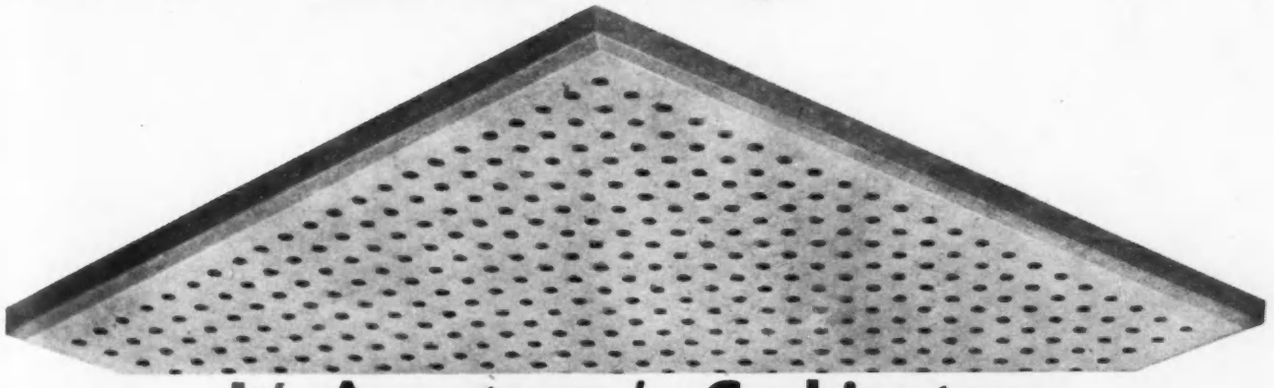
If Noise Demons plague your clients

End them with this ceiling



It's Armstrong's Cushiontone

NO CLIENT WANTS his office infested with noise demons. These nerve- rasping pests breed in the din of clattering machines, shrill bells, and loud voices. Noise demons reduce efficiency so much that it pays to eliminate them in old buildings as well as new.

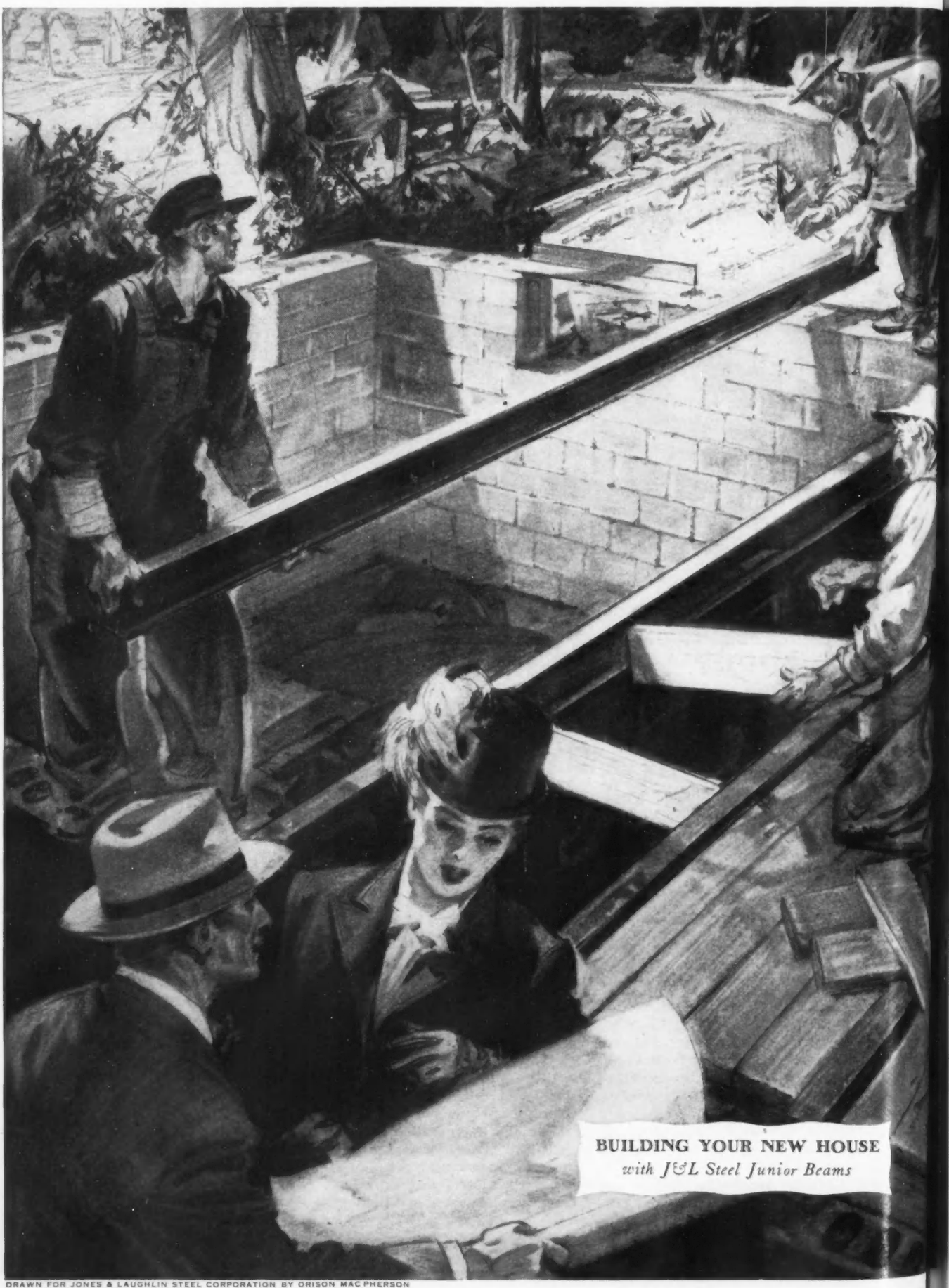
Many architects today are abolishing noise demons efficiently and economically by specifying ceilings of Armstrong's Cushiontone*.

The 484 deep drilled holes in each 12" square of this fibrous material absorb up to 75% of all noise that strikes the ceiling. Cushiontone is an excellent reflector of light and can be repainted without loss of acoustical efficiency.

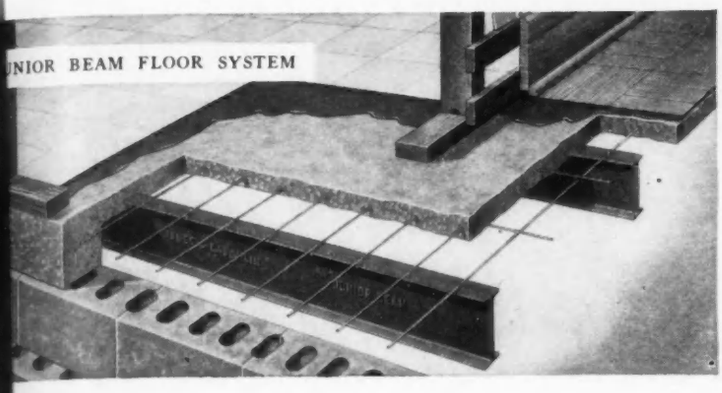
WRITE FOR FREE BOOKLET, "How to Exterminate Office Noise Demons," or see "Sweet's." Armstrong Cork Co., 2411 Stevens St., Lancaster, Penna.

* Reg. U. S. Pat. Off.

MADE BY THE MAKERS OF ARMSTRONG'S LINOLEUM AND ASPHALT TILE



DRAWN FOR JONES & LAUGHLIN STEEL CORPORATION BY ORISON MAC PHERSON



STEEL J&L JUNIOR BEAMS FOR FLOORS AVAILABLE NOW TO HELP YOU BUILD MORE PERMANENT, SALABLE HOUSES

You can order J&L steel Junior Beams now for immediate shipment from the J&L warehouse nearest you. They will enable you to offer your prospects and clients more for their money in a permanent steel and concrete floor—and at no extra cost. J&L Junior Beam steel-and-concrete floors provide a rigid, vibration-free, shrink-proof floor system as an integral part of the house foundation. They form a firestop between the basement and the remainder of the house. Also, they prevent moisture from rising through partition walls.

With Junior Beam floors, settling caused by shrinkage of wooden joists is eliminated. Consequently, plaster walls and ceilings do not have to be patched and repaired. Also there is no necessity to make repeated trips to the new house to repair twisted and stuck doors and windows.

Your prospects will be impressed with the fact that Junior Beam floors give them protection from fire, termites, mice and other vermin. Your reputation as a designer and a builder will be enhanced by the fine, permanent floor system you provide with these exclusive J&L light structural steel members.

JONES & LAUGHLIN STEEL CORPORATION

PITTSBURGH 30, PENNSYLVANIA

J&L STEEL

J&L SERVICE WAREHOUSES: CHICAGO · CINCINNATI · DETROIT
PITTSBURGH · MEMPHIS · NEW ORLEANS · LONG ISLAND CITY, N.Y.*
* Operated by Jones & Laughlin Steel Service, Inc.

STOUT STEEL FLOORS

Simplicity of placing Junior Beam floors is demonstrated in large illustration. Steel beams though strong are light, can be handled easily by one or two men. Wooden form is built around beams. When concrete is poured it forms solid cap over foundation of house. Small, cut-away drawing shows Junior Beams, reinforcing rods, concrete slab and detail of partition wall that will interest architects and builders. It also shows parquet hardwood floor laid in mastic. Provision can be made just as easily to place nailing strips in concrete to receive conventional floor. Carpets, linoleum, tile, terrazzo, composition block coverings are readily laid on this slab, too.

Junior Beams and Channels, exclusive Jones & Laughlin products, are structural steel sections literally "junior" to the well-known heavy structural members. Rolled on a J&L designed bar mill, they afford strength with minimum weight. Junior Beams have fiber stress of 18,000 pounds per square inch, yet 10" beam weighs only 9 lbs. per foot compared to 25.4 lbs. per foot for same size standard beam.

Ratios of Junior Beam and wood joist carrying capacity, illustrating practicality of using Junior Beams in construction work, are: 1 ton of 8" Junior Beams equals 1,225 board feet of 2"x 10" wood joists; 1 ton of 10" Junior Beams equals 1,540 board feet of 2"x 10" wood joists.

Ornamental stairs in many houses are fabricated from J&L Junior Channels. They give rigid support to slate, tile, marble, or terrazzo treads, risers and heavy wrought railings. Junior Channels and Jal-Tread checker floor plate provide non-skid, fireproof basement stairs.

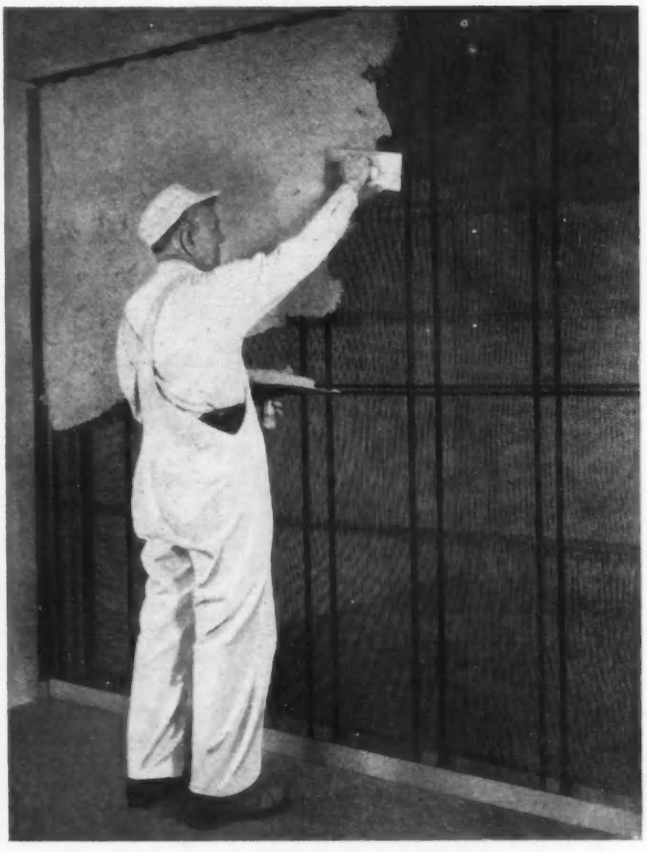
The Recreation room is more attractive in a Junior Beam house. The underside of the concrete slab and the beams, when painted, provide an attractive ceiling. Electrical conduit can be concealed in the slab itself. If desired, metal lath can be clipped to underside of beams and ceiling plastered as in any other room.

The Dewalt Saw cuts steel Junior Beams like lumber to the desired length right on the building job.

"Nine Simple Steps," illustrated folder, shows how easily Junior Beams are installed. "Junior Beam Floors for Residences" and "Engineering Data," give technical information. For copies write Publicity Manager, Jones & Laughlin Steel Corporation, Pittsburgh 30, Pennsylvania.

Six Million People will see the advertisement in Time, Newsweek, New York Times, Wall Street Journal and other papers during October and November, from which this ad was adapted.

SMOTHER ROOM-TO-ROOM NOISE



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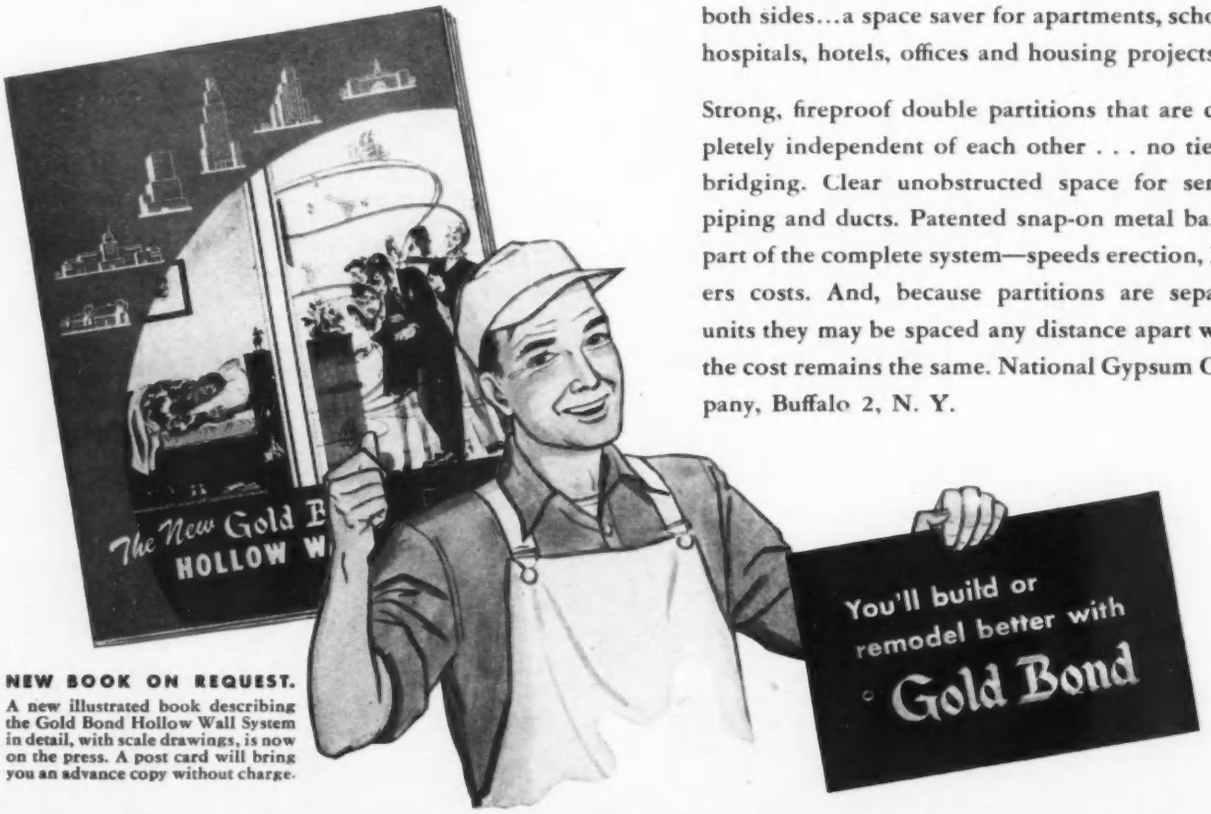

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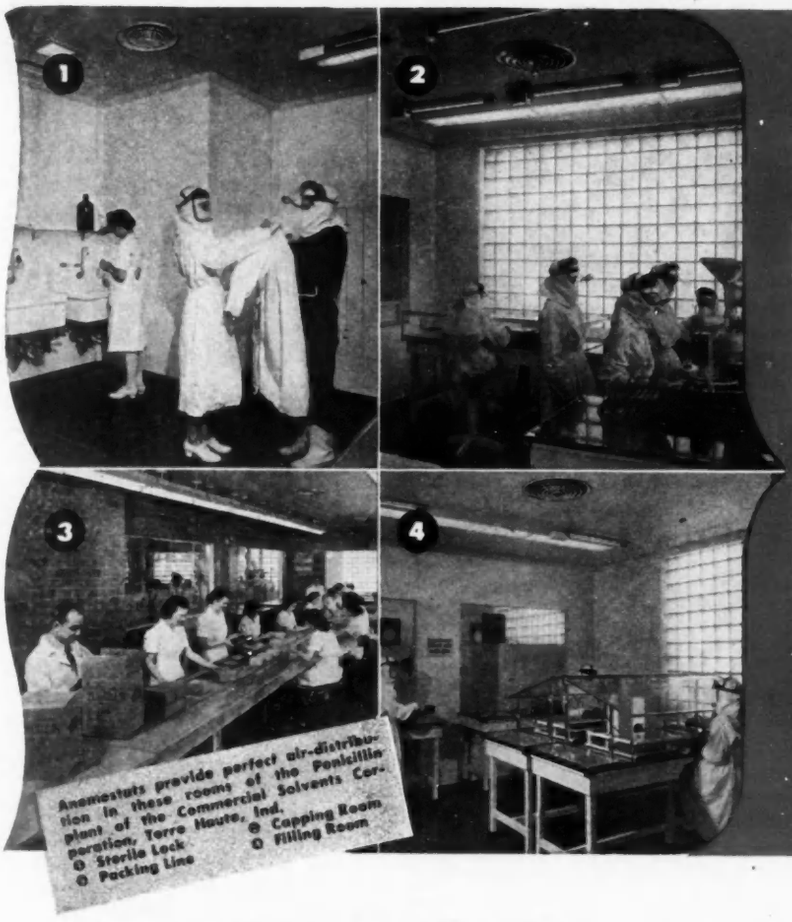

Anemostats provide perfect air-distribution in these rooms of the Penicillin plant of the Commercial Solvents Corporation, Terre Haute, Ind.
① Sterile Lock ② Capping Room
③ Packing Line ④ Filling Room

PENICILLIN PRODUCTION *depends on* SUCCESSFUL AIR-DISTRIBUTION

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Before conditioned air can be distributed to the rooms of the "sterile area" of this Penicillin plant, it must be filtered, washed, cooled, irradiated with ultra violet. And it must *reach* these rooms that way!

At the Penicillin plant of the Commercial Solvents Corporation, Anemostat Air-Diffusers serve all the rooms in the "sterile area." They solve specific air-distribution problems . . . from the perfect air-diffusion required in the filtration, vial-filling and final sealing rooms . . . to providing fullest air-comfort for workers obliged to wear an extra head-to-toe outfit of sterile garments.

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Such air-diffusion, controlled to *scientific* standards, is possible through Anemostats because they are *scientifically* designed to distribute conditioned air in pre-determined patterns without drafts. Here is how Anemostats provide perfect air-diffusion:

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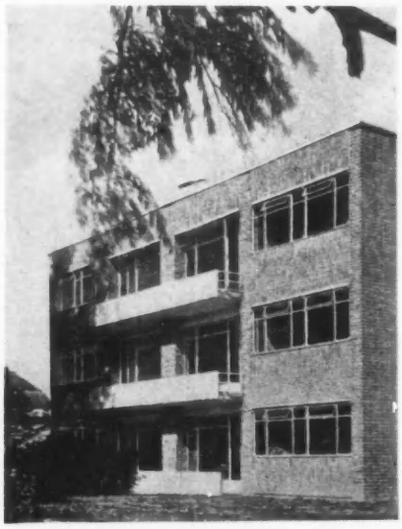

Flats at Southgate, England; F. Gibberd, architect. From "Homes for the People"

GOOD HOUSING

Homes for the People. By a Committee of Building Technicians. London E.C. 1 (38 Hatton Garden), Paul Elek Publishers, 1946. 4¾ by 7¼ in. 182 pp. illus. 7s 6d.

Not what kind of housing *will* be built, but what kind of housing *could* be built if full advantage were taken of modern techniques, is the main consideration of the authors of this book. Such an emphasis, in view of the acute housing shortage in Britain at the moment, almost seems to fall within the realm of daydreaming; actually, however, it is an emphasis based on shrewd common sense — the understanding that if the public does not know what the best available really is, and insist upon receiving it, the housing built in these first few postwar years will be little if any better than the prewar housing.

This is a book angled for the layman. It discusses the planning principles such as space requirements, layout of rooms, storage, etc.; delves lightly into structural technicalities; explains the systems of prefabrication; presents a good study of thermal and sound insulation; offers sage advice on finishes and decoration, services and equipment; takes up site planning and costs; and winds up with a chapter on "How to Get Good Housing," and a reading list.

It is that final chapter which is of particular interest. An absolute prerequisite of good housing, the authors declare, is nationalization of land in order to assure good siting and lower rents. But six other requirements also must be satisfied, they add: (1) the education of the public about building; (2) organized public criticism of designs; (3) improved organization in the building industry; (4) more government research on building; (5) the revision of obsolete bylaws; (6) the employment of qualified architects.

But, say the authors, "all these are important, and yet they are all subsidiary. They are ways by which a program of good housing can be implemented *once it has been decided that there must be good housing. Nothing but a strong and determined public demand can do this.* Once such a demand comes into being it will be irresistible and will force the utilization of the necessary technical measures."

In other words, dear public-to-be-housed, it is up to you!

CLINIC NEEDS

Better Hospital Care for the Ambulant Patient. Report of the Special Committee on Hospital Clinic Services. Harrisburg, Penn. (222 N. Third St.), The Hospital Association of Pennsylvania, 1946. 6 by 9 in. x + 184 pp.

Anyone who ever has waited, even for a brief moment or two, in the average out-patient clinic of a city hospital will welcome the emphasis of this report. The committee reporting made a careful survey of the clinics now operated by the voluntary hospitals of Pennsylvania, and an equally careful study of how those clinics could be made more efficient. Their findings probably apply as much to any other state in the country as to Pennsylvania.

While not concerned primarily with the architectural problems involved, the committee has embodied in its report a number of conclusions and recommendations which will prove of value to the hospital architect and the building committee. Of particular interest in that connection are the three charts prepared by the Baruch Committee on Physical Medicine to show the functions and organization of a community rehabilitation center, and the chapter in the text describing the functions of such a center.

CHURCH PLANNING

Planning Church Buildings. E. M. Conover, ed. New York 10 (297 Fourth Ave.), The Interdenominational Bureau of Architecture, 1945. 9½ by 12¼ in. 64 pp. illus. $2.00.

The purpose of this book, according to the foreword, is "to describe the facilities required for the seven-day-a-week programs of activities to which American Protestant churches generally are committed." This purpose it achieves. Following a few general notes on church design and the steps in church building, it presents a series of studies and plans for churches of various denominations, large and small, in different sections of the country. Styles of architecture are widely diverse; facilities provided range from only the most essential to the exceptionally elaborate with bowling alleys and game rooms. The plans show good utilization of space and a feeling for the special needs of the groups making up a congregation.

WHY ARCHITECTURE?

Opportunities in Architecture. By William Thorpe. New York 19 (45 W. 45th St.), Vocational Guidance Manuals, Inc., 1946. 6 by 9 in. vi + 92 pp. $1.25.

No matter what his profession, there are times in every man's life when he is asked to explain to a young career-seeker just what it is he does, what the requirements are, and how or why he likes it. Such questions are apt to be embarrassing; almost certainly they are difficult to answer.

The author of this small manual has summed up the profession of architecture in neat and concise terms. And, as is proper, he has "glamorized" it just enough to pique the interest of the aforementioned career-seeker. He writes informally and interestingly. Architecture, he says for example, "began as soon as prehistoric man came out of his caves and erected his first crude shelters. . . . As soon as he began to put any decorations on his hut, even though it was only the skull of his enemy, he ceased to be just a builder. He was an architect."

All the necessary information about the profession is here: what the work consists of, what the qualifications are, how the fledgling architect gets started, where to study and how much it will cost, what the registration requirements are. A good bibliography is appended, plus a glossary of architectural terms.

City Planning

WARSAW

The Reconstruction of Warsaw; by Edward Strzelecki. Planning the New Warsaw; by Stanislaw Albrecht. New York (151 E. 67th St.), Poland of Today, July, 1946, pp. 4–7 and 9–10, illus.

The first of these two articles is an unembroidered statement of the chaotic state in which Warsaw found itself at the end of the German occupation: some 84 per cent of the residential areas in the city proper completely destroyed; no water supply; thousands upon thousands of bodies buried in the ruins. However, by the end of 1945, less than a year after the liberation of the city, a little more than half of the prewar water system had been restored and power output had been brought back to 70 per cent of its prewar figure. Furthermore, 8,330,000 cu. ft. of buildings had been restored and another 40,188,000 cu. ft. in danger of collapse torn down.

The second article complements the first with a description of the plan drawn

(*Continued on page 28*)

the Commodore

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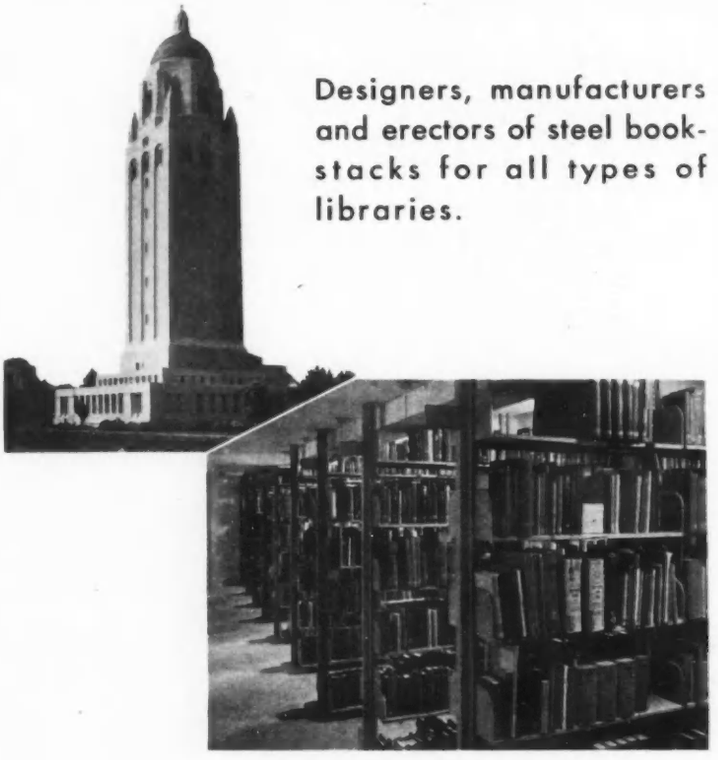

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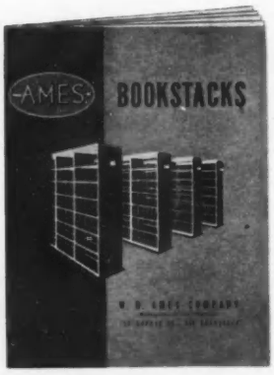

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REQUIRED READING

(*Continued from page 26*)

up for Warsaw's reconstruction. Highlights of the plan are: a green belt separating the industrial area from other sections of the city; grouping of the educational institutions within a university section, segregated by a wide green belt; a community center for the care of small children in every residential unit.

ST. LOUIS

Metropolitan St. Louis Blueprints Its Future, St. Louis 1, Mo. (511 Locust St.), St. Louis Chamber of Commerce, 1946. 8½ by 11½ in. 44 pp. illus.

This report, by the Greater St. Louis Committee on Economic Development, an affiliate of the city's Chamber of Commerce, indicates a construction and improvement program calling for expenditures approaching $600 million, expected to swell employment in the area to an estimated 784,000, 12 per cent above the war peak in 1943. The city's population, it is predicted, will rise to 1,761,700, an increase of 9.3 per cent over the 1943 figure and 23 per cent over 1940. Reconversion plans for established manufacturing concerns call for expenditures totaling $99,415,000 and announced new industries will spend $62,955,200 for plants and equipment. Expenditures in the field of public improvements are expected to total $192,894,000; in public utilities and transportation, $107,838,800; in schools, $27,823,550; in hospitals, $11,166,940; in housing, $11,000,000.

CLEVELAND

Planning Cleveland in 1945. Cleveland 14, Ohio (519 City Hall), Cleveland City Planning Commission, 1946. 6 by 9 in. 24 pp.

This annual report of the Cleveland City Planning Commission centers around the development of a general plan for the central portion of the city, a plan completed and submitted for public review in 1945. It contains a proposed pattern of major business and manufacturing areas, home neighborhoods left largely in their present locations but protected and improved, a major thoroughfares plan, recommendations for a long-range program of increasing the number of playfields and playgrounds, a program of public works, etc. In line with this central plan, several important studies were inaugurated last year, one of them being a survey to determine exactly how much land there is left in the city that is suitable for industrial development. Another accomplishment of the year was the tentative blocking out of the extent of blighted areas. And various zoning revisions were passed, one of them prohibiting residential construction in industrial districts, another reducing allowable densities.

ARCHITECTURAL

RECORD

WHEN CEILINGS DISAPPEAR!

CEILINGS are off — or are coming off! The $10,000 ceiling on new houses has already been blown off. Wage and price controls are rapidly disappearing. Labor and management are being freed to negotiate their own terms. Rent controls remain. Priorities and allocations of building materials are still in force to channel building efforts into house production, and restrictions on non-residential building still hold. But even these restrictions seem destined for the discard in the not-too-distant future, depending somewhat on the speed with which critical materials can be brought into the market now that the fire has been set under prices and stabilization.

Set off by the meat-price torch, price ceilings throughout industry can be expected to go up in smoke; government, it seems, will not longer attempt to blanket the fire of prices and wages. The control from here out will be in the hands of industry and business, and "free enterprise," again free, will have its chance, perhaps its last chance, to prove its ability to control the country's economy and prosperity without a boom-and-bust catastrophe. The ball has been passed back to industry, or should we say that a fumble has been picked up? The responsibility for speeding production and economic order is now definitely being shifted from government to business.

Production of building materials, stifled by a blanket of "profitless-price-ceilings" should spurt ahead under its own steam, under the industry's own price control. Its own price control — but what rise in prices can the market stand? Will inflation be any worse in building than in food? Will current black-market prices be the limit of the immediate upward trend of prices? Is it possible for producers to price themselves out of their market, to bring on a buyers' strike? How long will it be before supply will catch up with demand and prices come down in a competitive market? How much control can and will be exercised by the construction industry's management and labor? Answers to some of these questions regarding probabilities and possibilities have been summarized by economists (see pages 92–95 and 96).

While it may take longer to make readjustments from government control in the building field than in some others, it seems certain that building recovery will be accelerated by the change. The timing of building operations is important and architects will soon be in a better position to advise their clients regarding the earlier starting of actual construction. Clients who had deferred or even abandoned the making of plans may be encouraged to get them back on the boards. We believe that while the immediate effect of the removal of price ceilings will produce higher levels of prices and wages, costs will find more reasonable and stable levels at an earlier date than could have been expected a few weeks ago. We believe that next year should see the building industry given the green light to go full speed ahead to provide the buildings so sorely needed to serve an expanding economy.

Kenneth K. Stowell

EDITOR

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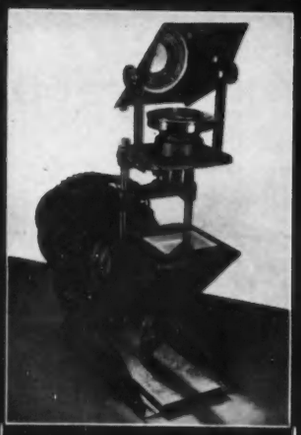

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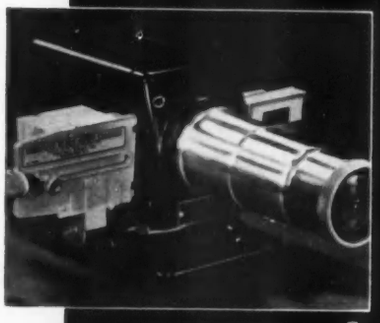
EYES AND EARS IN SCHOOL

AUDIO-VISUAL DEPARTMENTS



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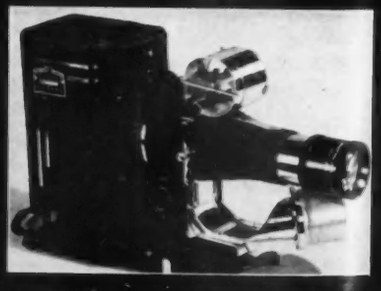

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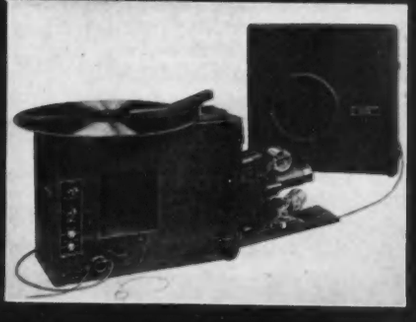

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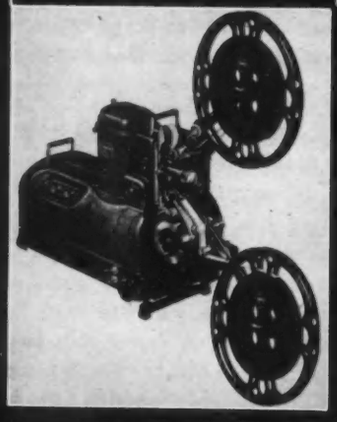

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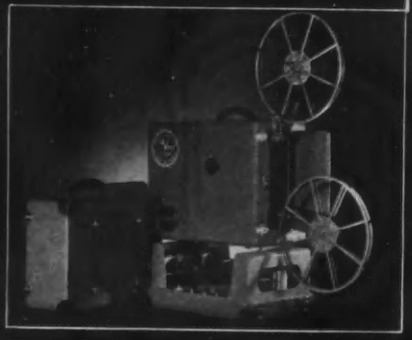

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Movies and radio first wandered into school carrying a good deal of excess wool and blat. Decades of effort by manufacturers, educators, and wealthy foundations have finally begun to regularize the use of these potent aids to learning.

We can now state the problem simply: it is how to make effective educational use of projected sight and sound.

Three years ago, in connection with a school "building types study," the ARCHITECTURAL RECORD *found existing information inadequate, and commissioned some special research on the handling of sight and sound in individual classrooms. The brilliant findings of Philip Will, Jr., published in the February issue, have made school history* (list, page 78).

We have now joined forces with the Visual Equipment Manufacturers' Association and the publications Hear and See *and* Business Screen, *to publish the findings of their joint research into the broader question of audio-visual facilities in the school as a whole. The project committee of the Council is composed of Ellsworth C. Dent, chairman; Frank Carlson, Adolph Wertheimer, Robert Engel. The executive secretary is Mr. Otto Coelln, editor of* Business Screen.

***Continued from issue of February 1946. This study in collaboration with* Hear and See**

THE SCOPE OF THE AUDIO-VISUAL SERVICE

UNLESS audio-visual materials are made accessible, unless they are convenient to employ and to maintain, and unless they are understood as direct aids to regular teaching, their use in schools will be spotty, inadequate, and a failure. Schools unequipped with outlets and maintenance facilities, and teachers untrained in the nature of the new tools, will at best put on occasional "shows" and will miss the great opportunity. Vital ingredients in an audio-visual program are:

Balanced supply of materials

These consist of 16-mm. sound and silent films, slide films and slides, stereoscopic slides, recordings, charts, maps, models. A library of such material is needed in rural areas on at least a county basis; in towns on a district basis; in larger cities in the individual school.

Projectors in individual classrooms

At least one 16-mm. sound projector should be provided for every 5 or 6 classrooms (or one to every floor) and a higher proportion of slide, slide-film, and opaque equipment should be made available to every science, social science, art, and home economics classroom; recorders and playbacks are needed for classes such as those in music, English, and languages.

Organized service facilities

In smaller school systems, the administrative, clerical, and mechanical servicing of the audio-visual program is usually best subjoined to the school library; in larger ones there must be a separate audio-visual center including facilities for storage, inspection, maintenance, and previewing.

Adaptations in auditorium and library

The auditorium must be planned for proper darkening and equipped with projector platform and screen; the library must now store the new kinds of materials in addition to its books.

Teacher training

Not the least important function of the audio-visual center is to be found in the opportunity it offers to train teachers in the use of visual aids. As was remarked in the discussion of the individual classroom (ARCHITECTURAL RECORD, Feb., 1946, p. 68), too many teachers — and also too many school heads — are confused about the part played by visual aids in teaching. The type of material that is now coming into being is adapted not to long "shows" put on for their own value, but to "spot" use. It helps to make a point quicker than the same point could be made in words, far more accurately than a sketch on the blackboard, far more vividly than an illustration in a book. "Effective use of audio-visual materials," says Dr. Edgar Dale of Ohio State University, "will require abler teachers," requiring training.

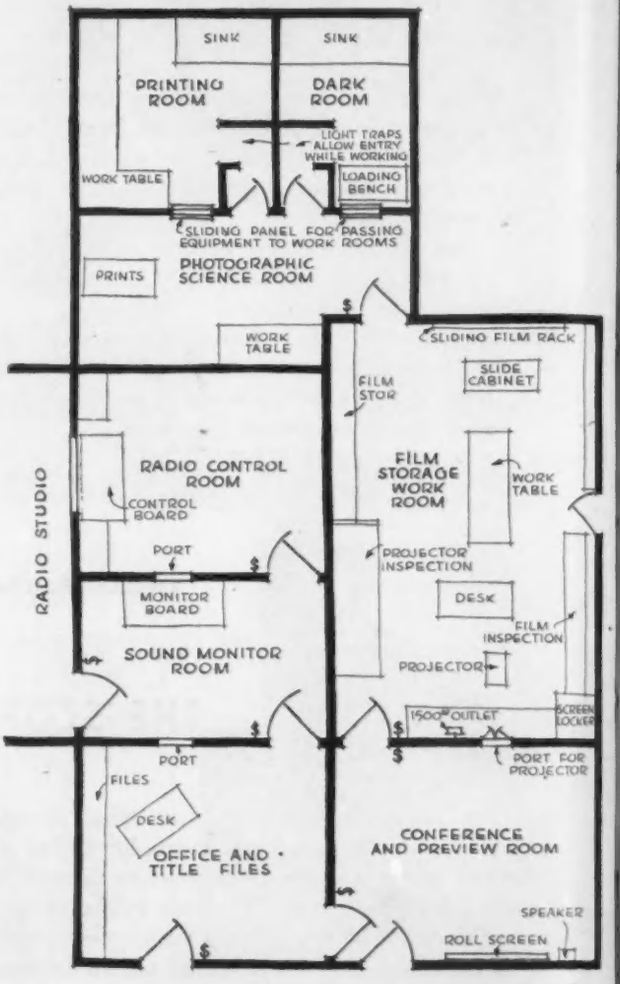
COMMON AUDIO-VISUAL AIDS (Opposite page)

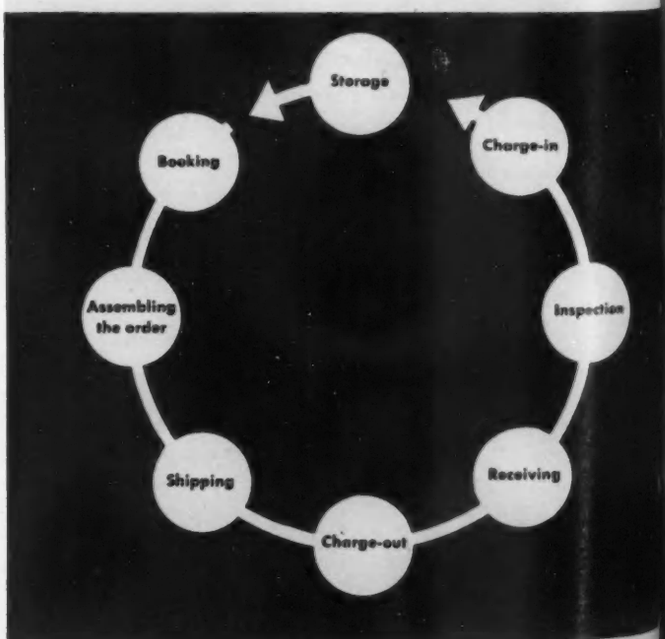
1. Polaroid stereoscopic projector; 2. Radio (phonograph playbacks are similar); 3. Overhead slide projector; 4. Opaque projector (uses slides also); 5. Slide projector, 2 by 2 in.; 6. Slide-film projector (uses slides also); 7. Sound slide-film projector; 8. Sound motion picture projector (speaker built in); 9. Sound motion picture projector (separate speaker).

Courtesy of Society of Visual Education (1 & 6); R.C.A.; Keystone; Bausch & Lomb; Eastman Kodak; Illustravox; Ampro; De Vry.

A "communications center" for a large school building or a "service center" for a school system:

THE AUDIO-VISUAL CENTER

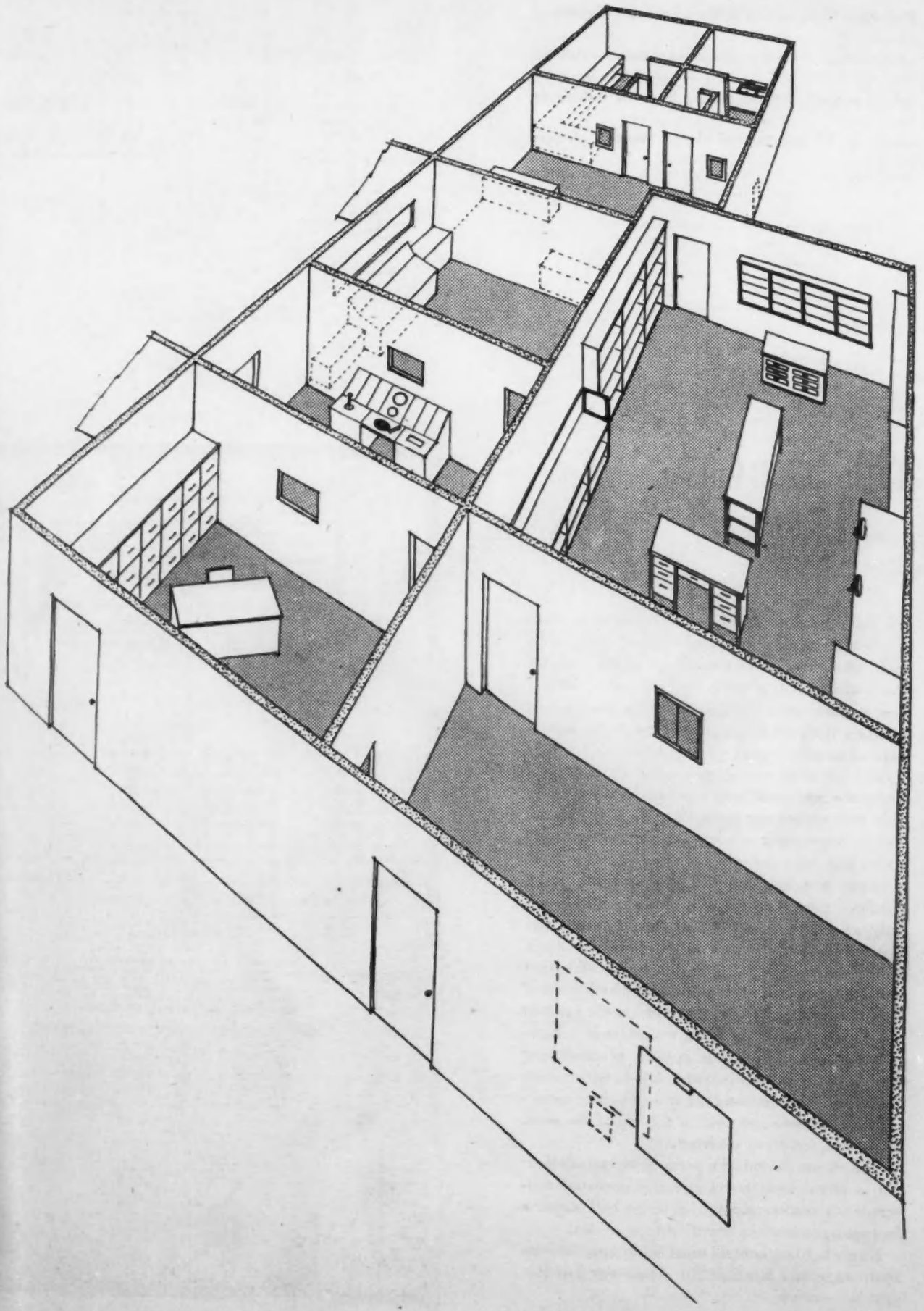




THE unified central department suggested in the accompanying plan and sketch serves the following functions:

1. Storage, handling, and distribution facilities for film, slide, and other audio-visual materials.
2. Storage and care for equipment.
3. Preview facilities where teachers may go over new materials in advance of using them in class.
4. Production of pictures within the school.
5. Distribution of radio or recorded programs to individual classrooms over a public address system.
6. Possible production of recorded or radio programs within the school, including also the possible production of programs for television in the future.
7. Circulation of materials to other institutions, if the Audio-Visual Center serves a town or district (see circular diagram which indicates the sequence of steps that have to be taken in such a circulation department).

The film storage work room will be supplied with specialized racks for film, slide films, glass slides, and records, furnished by manufacturers. Relative humidity in this room should be held even at about 50 per cent, and the preferred temperature is low, 50° F. Freedom from dust is important where film inspection and rewinding take place. Since dust precipitation by air-conditioning apparatus cannot usually be installed, floors and walls are best covered with non-fibrous resilient washable materials such as linoleum.



Projection facilities where the whole school gathers; an opportunity to put on programs created within the school as well as those coming from the outside or made up by selection of choice items in storage

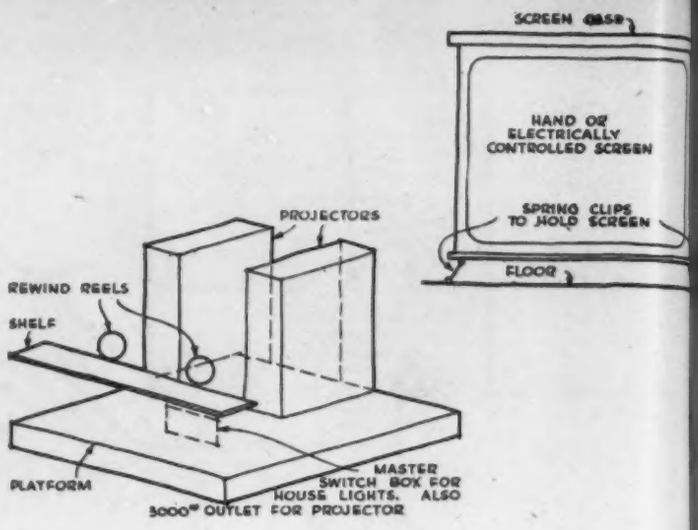
THE AUDITORIUM

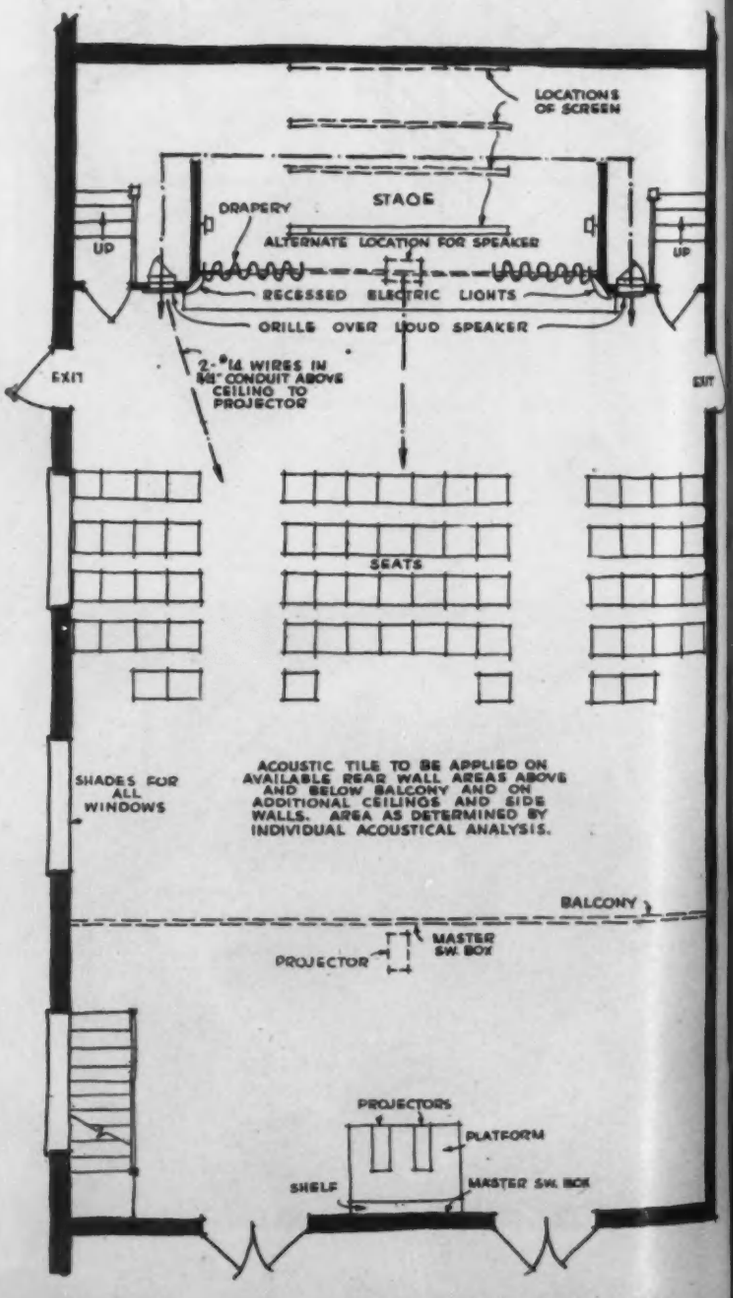
In planning school auditoriums the town must often be thought of no less than the school itself. Where there is combined use of the room for auditorium and gymnasium purposes, careful preparation must be made for darkening. An effective device for this purpose is the accordion type of fabric-covered folding door.

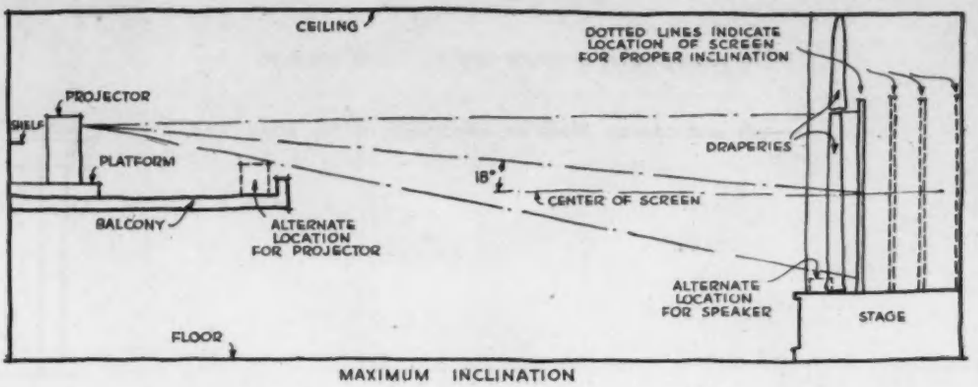
The 16-mm. sound projector is the most favored equipment and this size is now available with carbon-arc lamp for the longer throws. Booth requirements vary with state and city codes but only the arc light presents any real problem since the film is of the slow-burning "safety" type. Outlets should be provided not only at the two balcony stations shown in the perspective but also at a series of stations down the centerline, permitting the use of slide-film and other equipment without "haywire." *Each of these stations should be connected to the speaker cable under the floor*, avoiding troublesome temporary hookups. The classic speaker position is at the top of the proscenium arch but in wide rooms best distribution is obtained from a pair of speakers at either side and toward the top of the arch. Balconies are often omitted.

The screen should be a permanent installation: (a) in small halls an electrically operated roll-screen is recommended; (b) in larger halls either a lace-and-grommet or a pulley-type screen.

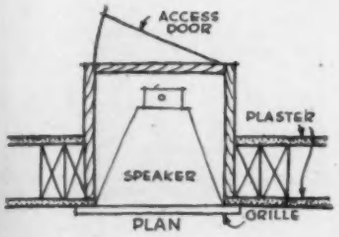
House lighting control must be obtainable from both stage and booth, with a two-way monitor system between.



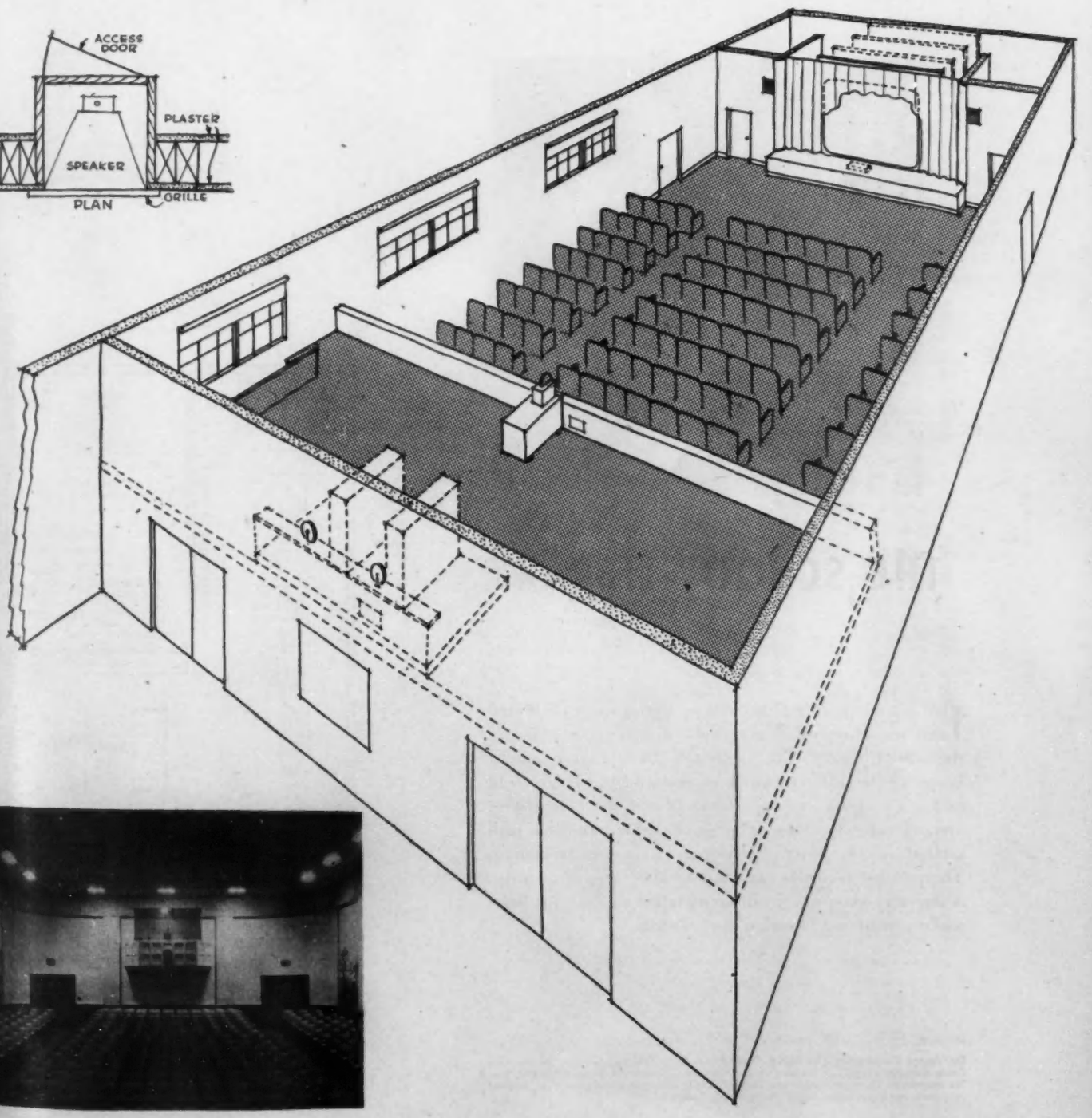


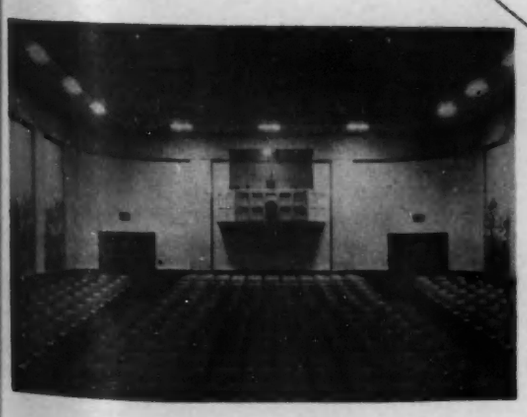


MAXIMUM INCLINATION



PLAN



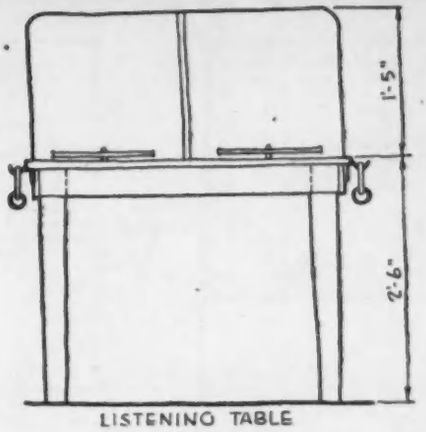


The photographic emulsion and the sound track re-

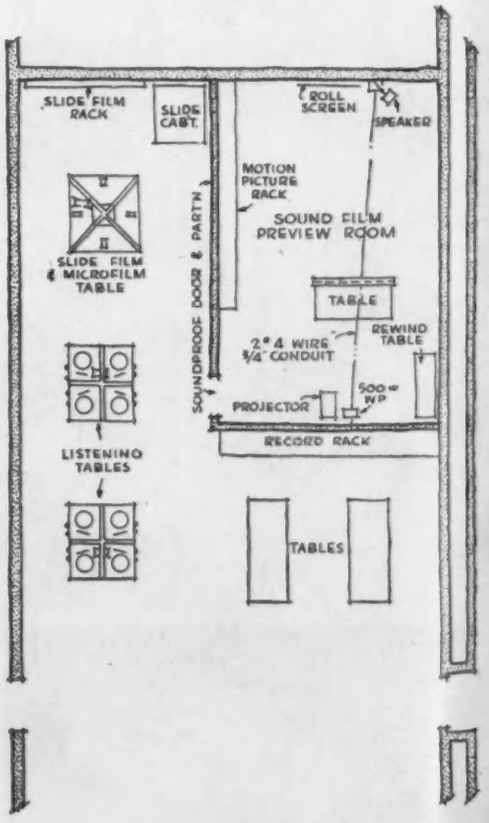
tain and convey ideas as effectively as the book

THE SCHOOL LIBRARY

THE actual "reading" as well as the storage of filmed and sound-recorded materials should take place in the school library. The suggested library arrangement keeps all the different kinds of material together — old and new — books, records, films, film-strips, glass slides, opaque reproductions. The small table-mounted projection devices illustrated require no room darkening. The preview facilities can be used also for group study. A one-way glass panel can be installed to shut out light while permitting librarian supervision.



LISTENING TABLE



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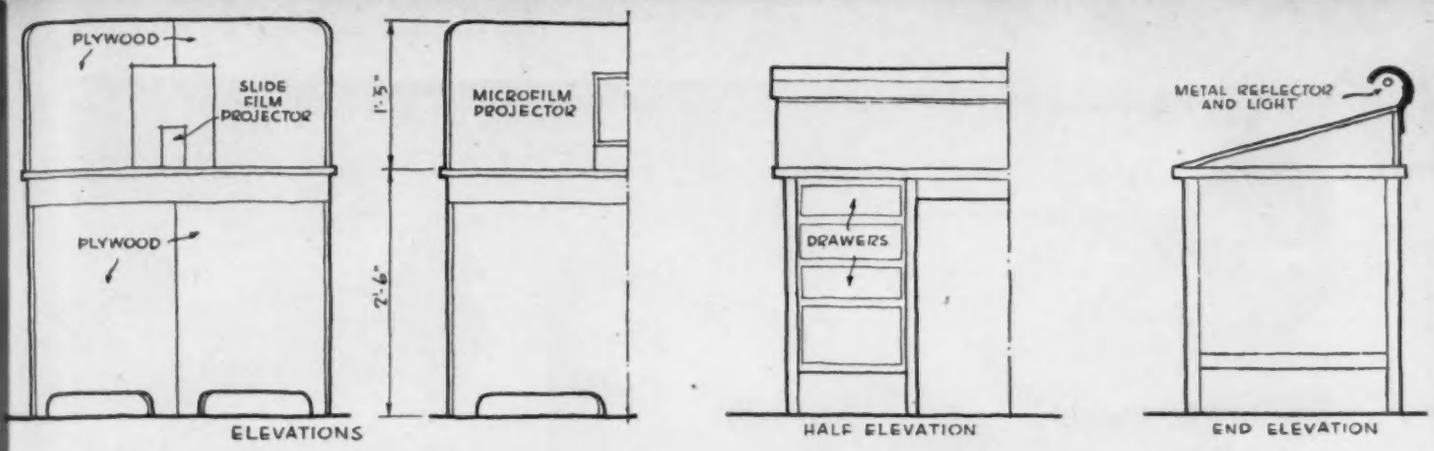
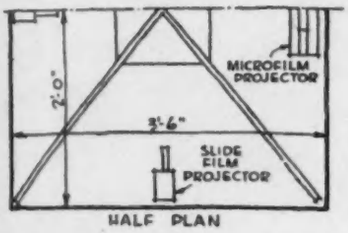
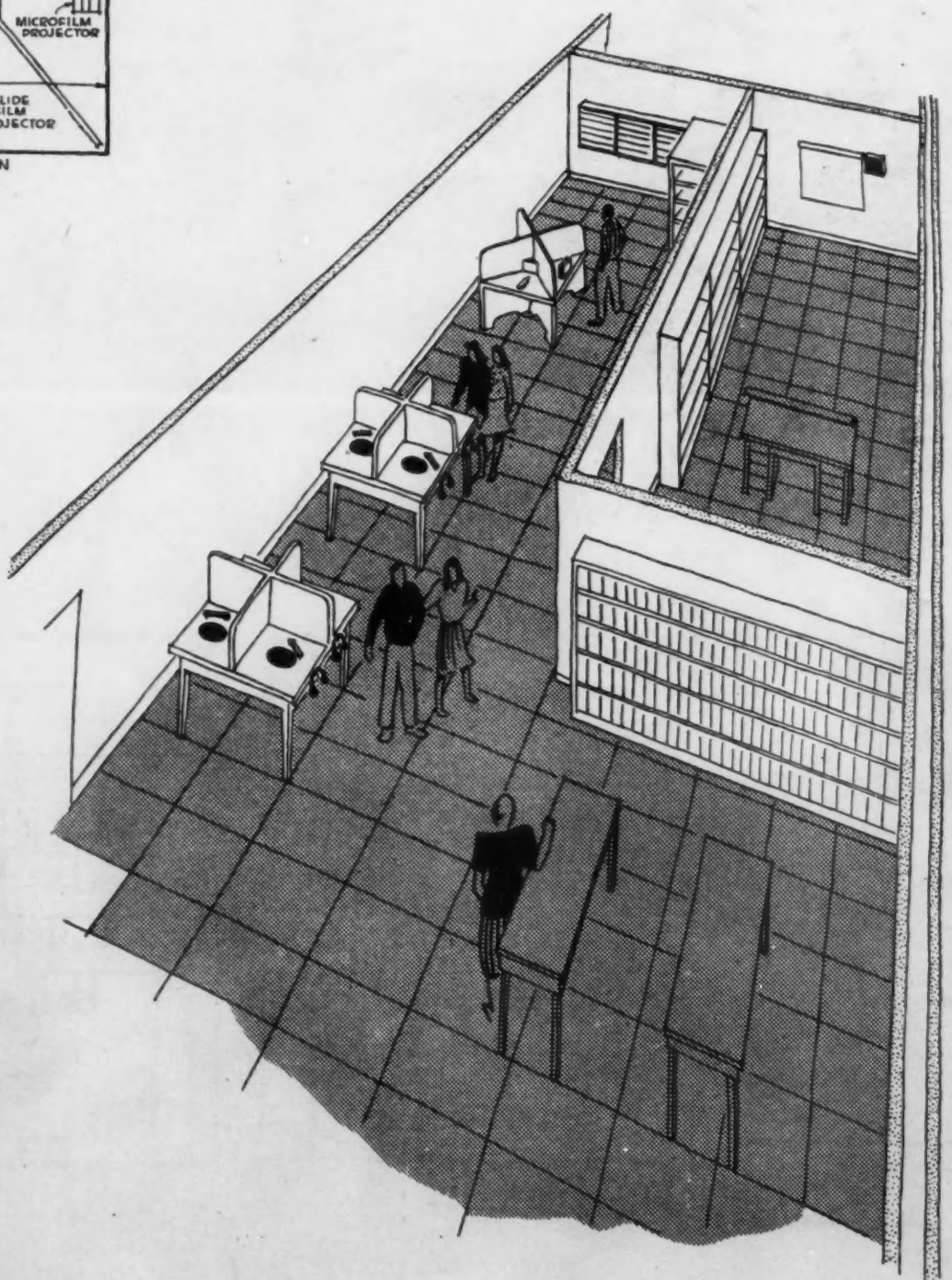
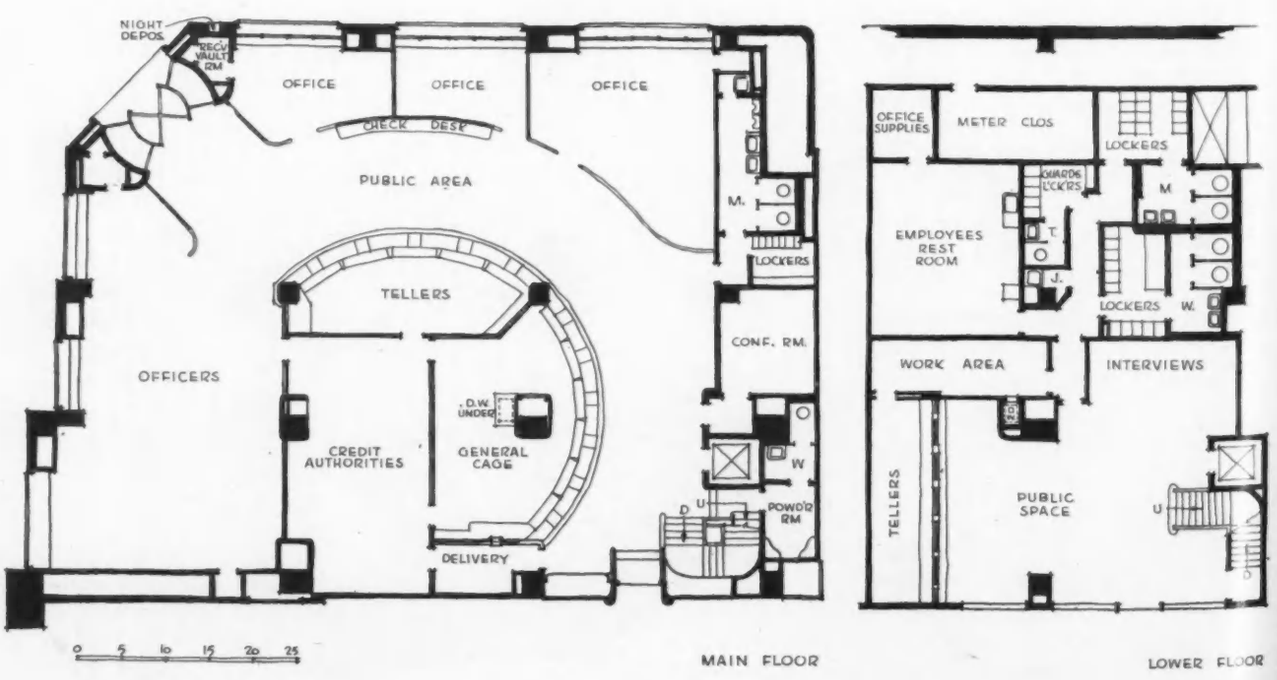

PLYWOOD
SLIDE FILM PROJECTOR
PLYWOOD
ELEVATIONS
1'-3"
2'-6"
MICROFILM PROJECTOR
DRAWERS
HALF ELEVATION
METAL REFLECTOR AND LIGHT
END ELEVATION


2'-0"
MICROFILM PROJECTOR
3'-6"
SLIDE FILM PROJECTOR
HALF PLAN



Gottscho-Schleisner Photos

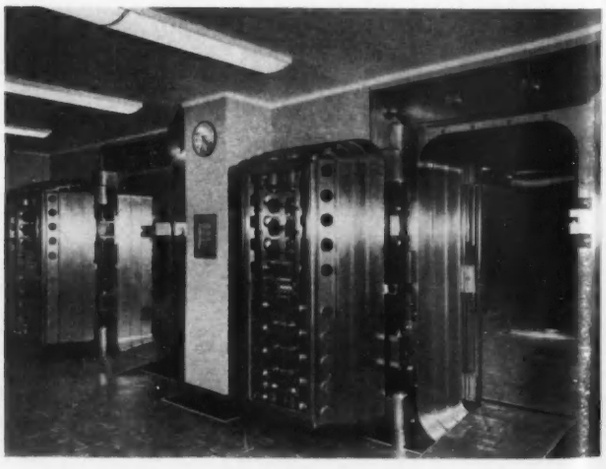


BRANCH BANK IN ROCKEFELLER CENTER

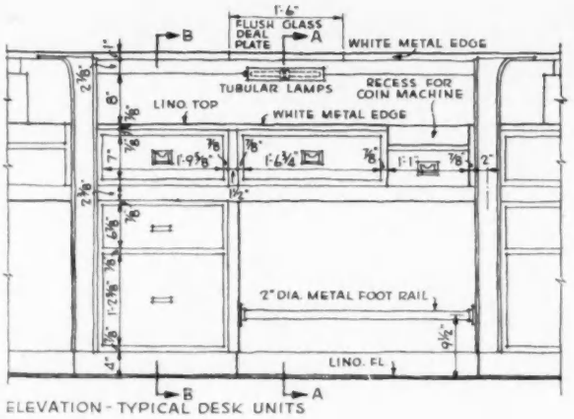
Bankers Trust Company, Rockefeller Plaza, New York

Shreve, Lamb and Harmon Associates, Architects

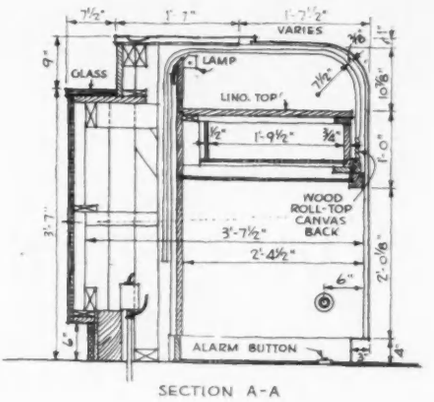
BRIGHT and warmer is the prediction for the banking room of the future. Here is one of the first delineations of what looks to be a firm trend. Bankers, it appears, are thinking more of their customers, less of their own austerity. They are asking for something bright and warm, something less formal, less chilling. And architects will welcome this trend no less than will the bank's patrons. There is no evidence here that "warm" is taken to mean ruffled curtains or colonial fireplaces. It means color and liveliness, and it asks removal of barriers and grilles behind which tellers operate in a world apart. In this three-story banking quarters Vanderbeck and Scott for the architect associates have achieved the first requirement with white oak for dados, columns, railings, counters and check desks, blue-green plaster walls, with color accents in upholstered furniture done in green or ivory leather, in draperies, and in a colorful mural (by Lillian Christiansen). The barriers (the psychological ones if not the physical ones) have been obviated by the use of a roll-top teller's desk unit which contributes much to the open appearance. (See details on p. 83.)



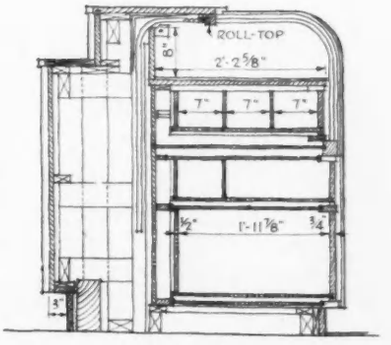
Lower floor (shown above), reached by elevator or by stairs carpeted in blue-green broadloom, houses individual banking services. Walls, as on main floor, have white oak dado, blue-green plaster walls, with some lemon yellow here. This banking floor has sound corrected flush ceiling with recessed fluorescent tube strip fixtures. Check desks on this floor are white metal with glass tops. Safe deposit vaults are on the next lower level. Here stainless steel sets the note, in vault doors, walls and ceilings



ELEVATION - TYPICAL DESK UNITS

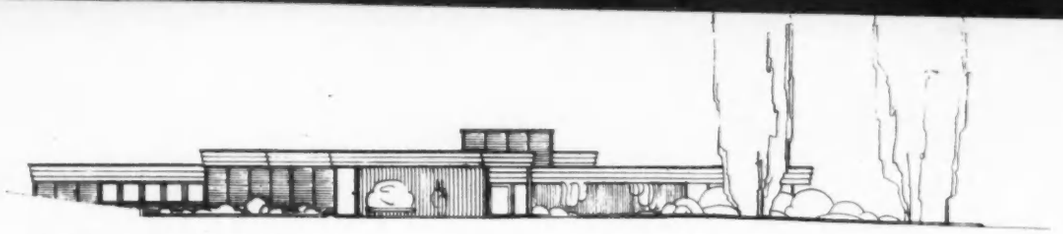


SECTION A-A

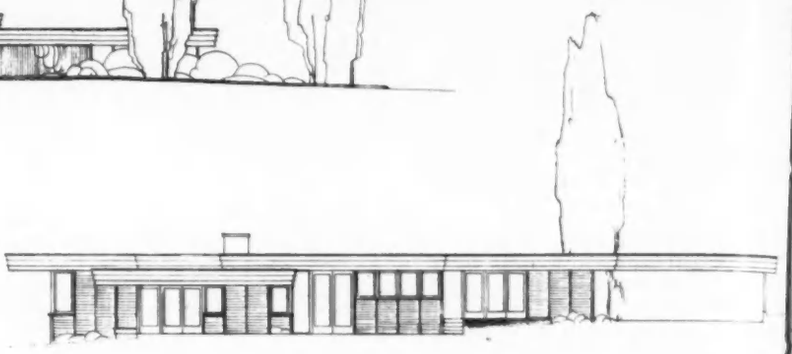


SECTION B-B

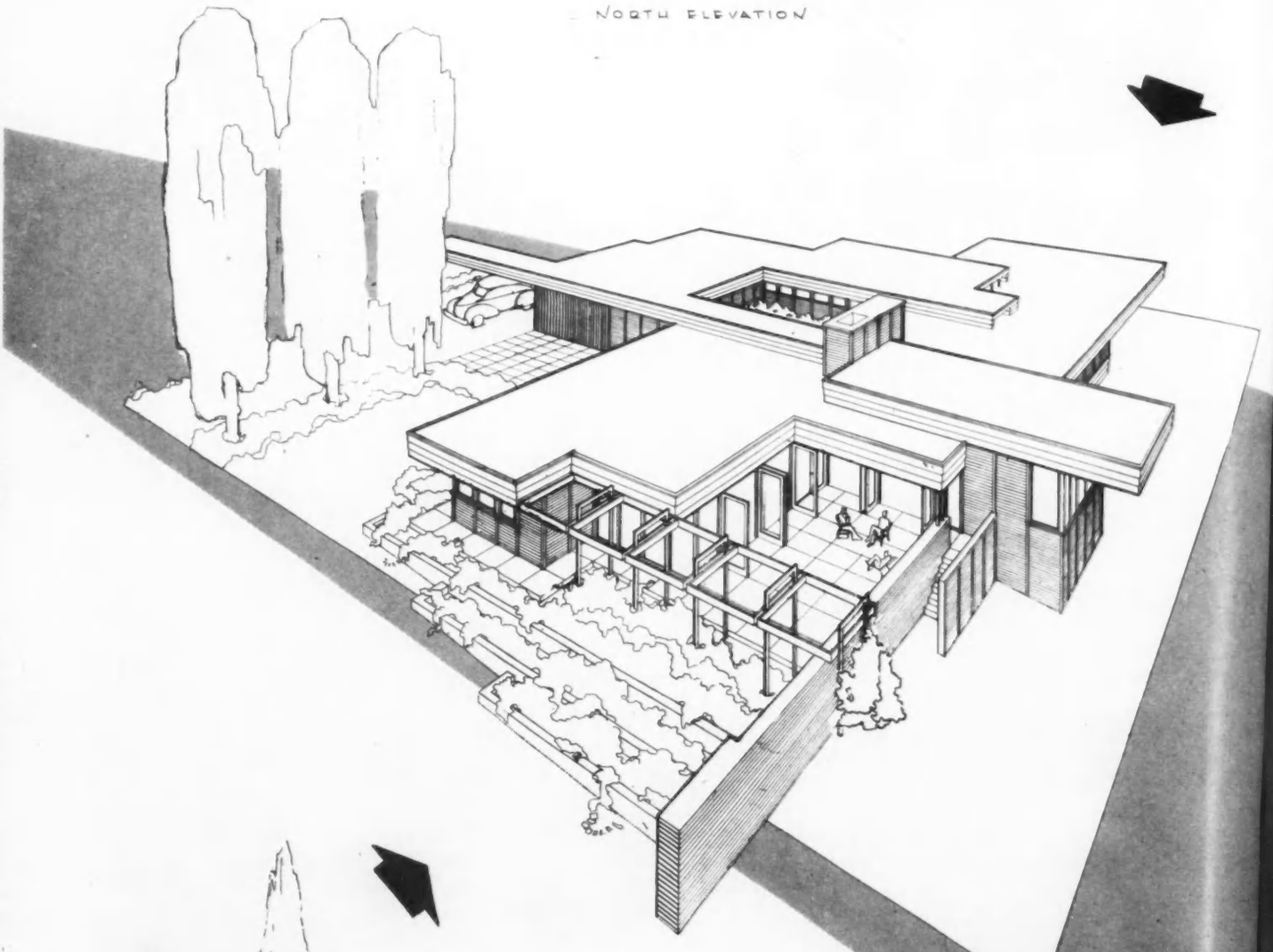
Tellers' roll-top desks, eliminating the usual grille enclosure, are a feature of this bank most commented on by the customers. Each teller's position has a glass deal plate slightly raised above the oak counter top with a depression in each to receive coin passed over the counter. Money drawers are well out of reach of any light-fingered visitors, and the roll top is quickly closed in case of an alarm. Each teller's name appears on a removable plastic strip on the face of the wood enclosure immediately under each deal plate. The architects have had many requests for details.

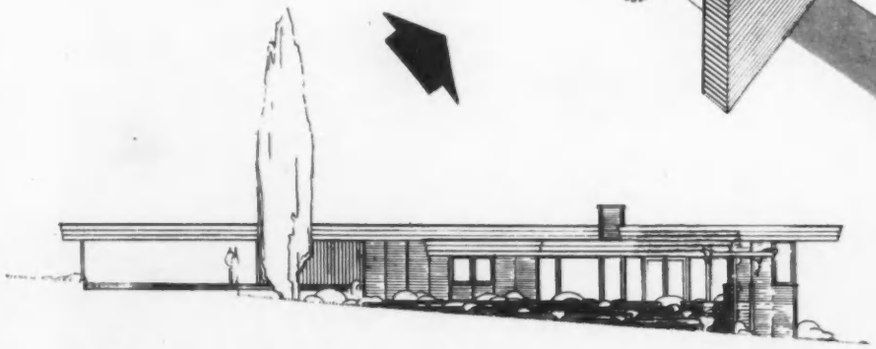


WEST ELEVATION

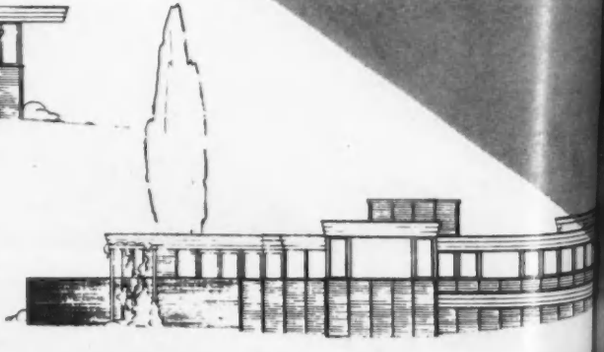


NORTH ELEVATION





SOUTH ELEVATION

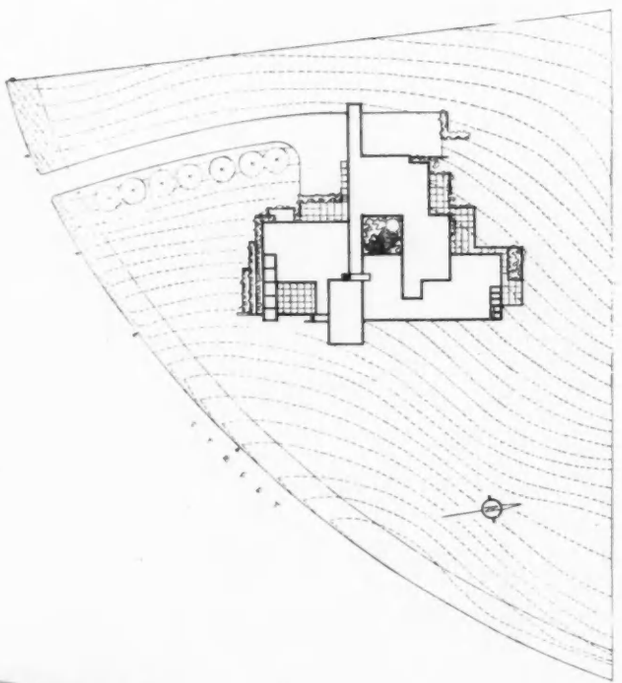


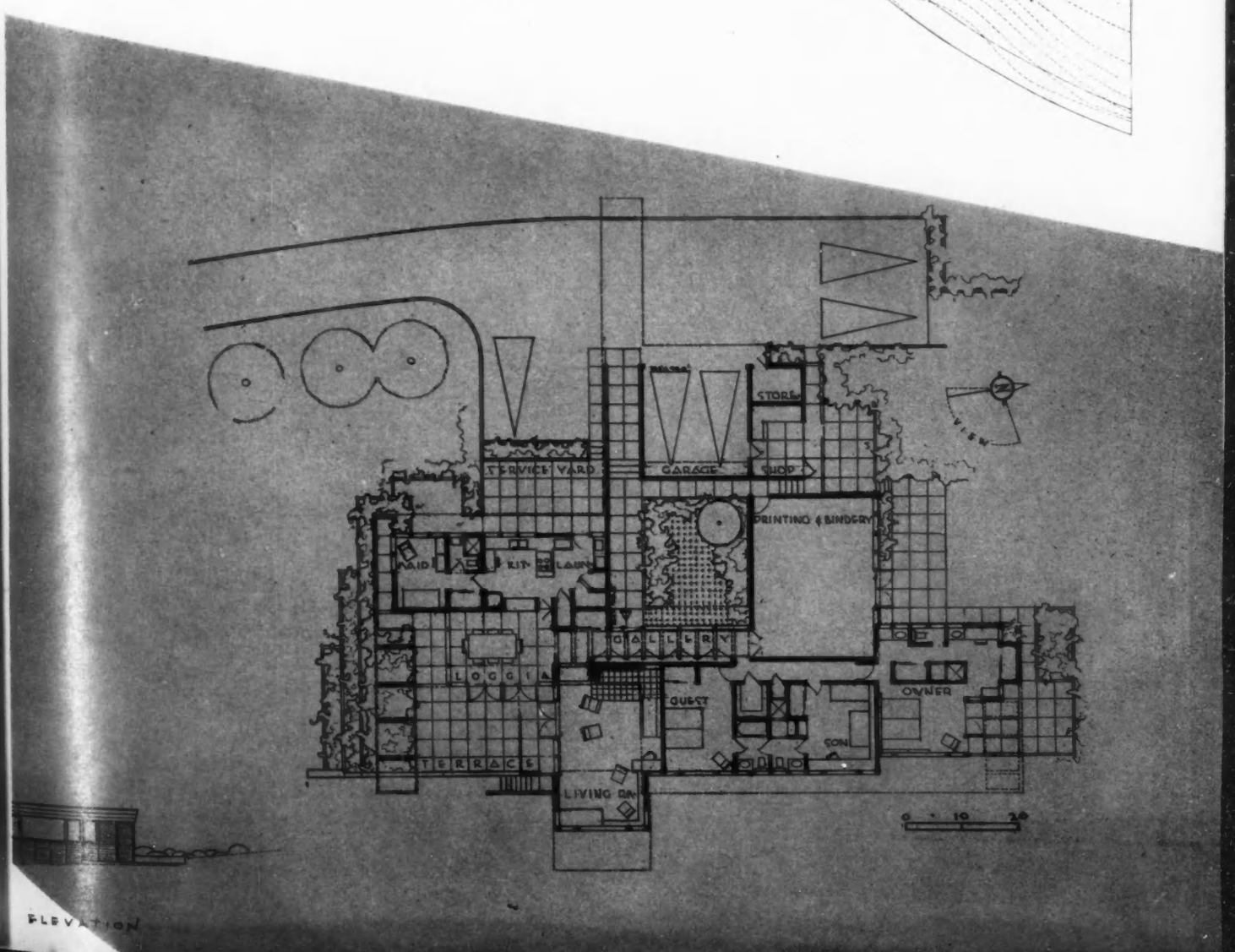
EIGHT ROOMS, FOUR BATHS, SIX TERRACES

Residence for Mr. and Mrs. Lewis Allen, San Mateo County, California

Harwell Hamilton Harris, Architect

AN assignment such as this house represented should be one to please any architect. For there is no indication of any restraints placed in his path, either in styling or plan, and there are no visible signs of budget limitations. Here he was free to work out the requirements of this family with a minimum of compromises. The printing and bindery room therefore was easily handled; it has an isolated location, and becomes one side of the interior patio enclosure. The rest of the house rambles at will from terrace to patio to terrace (there are six of them). The combination of kitchen and laundry takes a natural position, and the dining loggia and living room bring indoor-outdoor living to a very logical realization. The device of the patio gallery accomplishes the same result on the interior, also gives good room isolation.





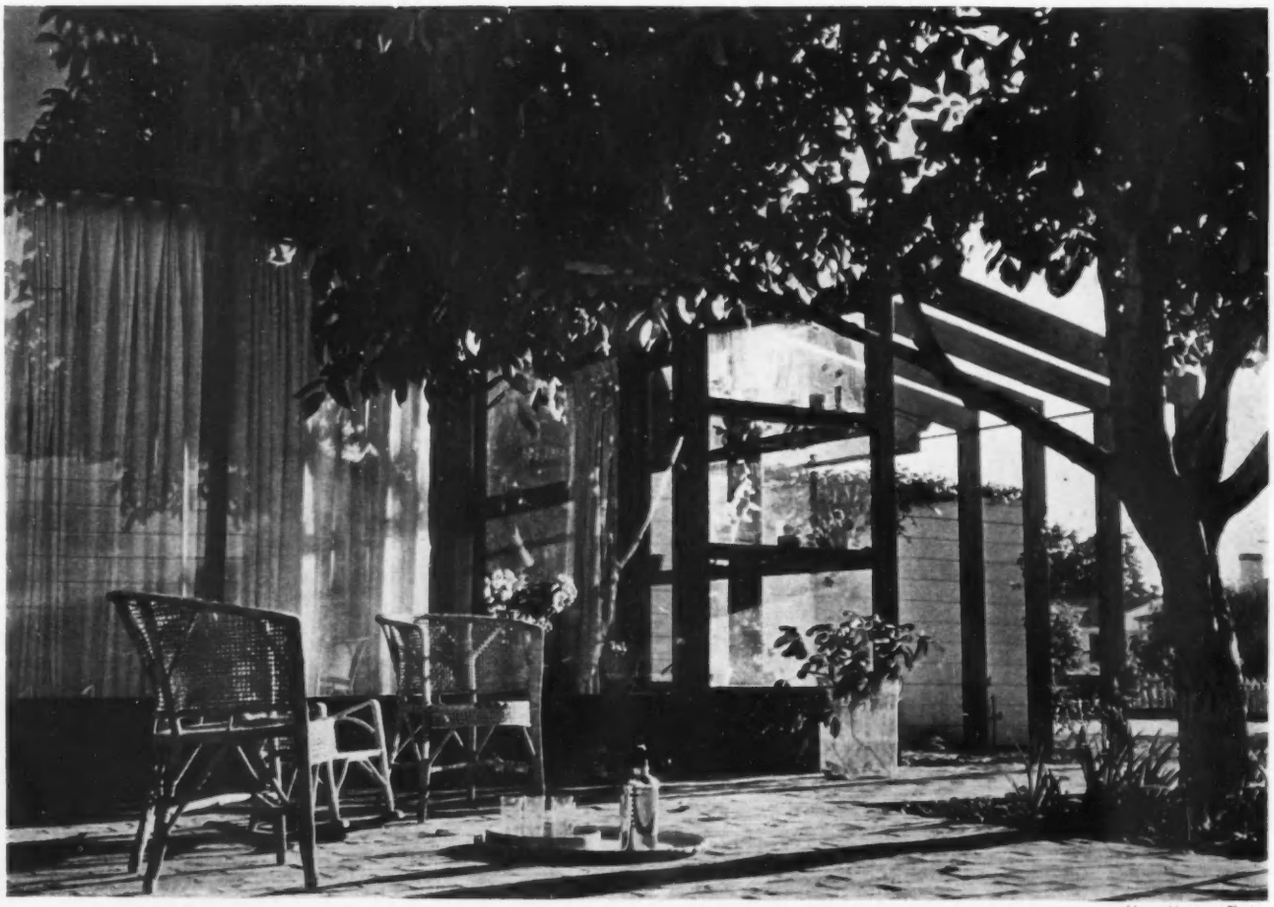
ELEVATION

THE SMALL HOUSE CAN AFFORD GOOD DESIGN

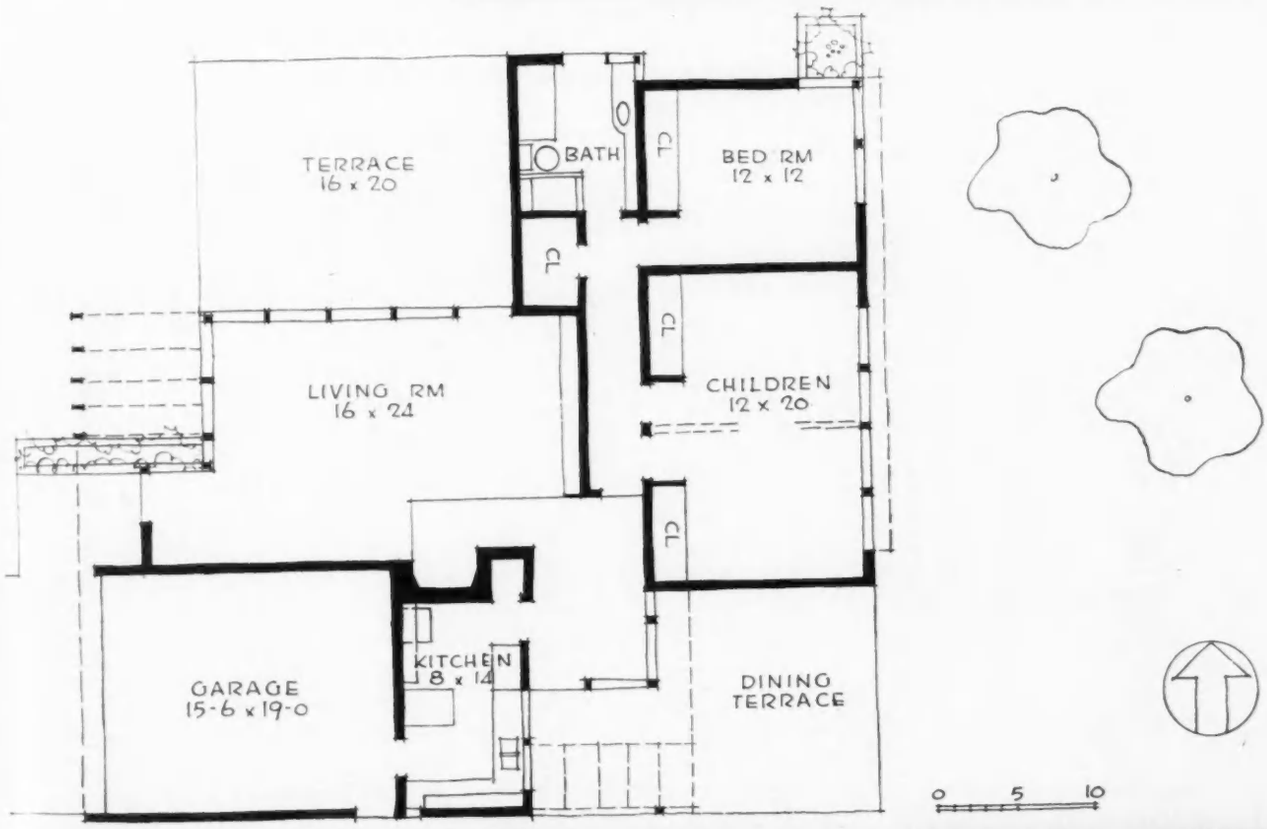
Residence for Mr. and Mrs. Richard J. Hoffman, Van Nuys, California

Gregory Ain and George Agron, Designers

WHEN this house was built, before the war, it cost less than $5,000, including the architects' fee. This is reported now, not to break anybody's heart, but to demonstrate the high value of capable design service in the really small house. The livability rating here obviously is high, both inside and outside the house. Even though the lot is but 60 ft. wide, the designers have managed to provide two sheltered terraces well integrated with the house. Orientation posed an especial problem, moreover, in that the location is in a sun-baked California valley, suggesting that the principal exposures be north and east. West windows are shaded by a trellis, sloping with the ceiling plane; high flower box screens them from front approach and the garage driveway.



Harry Hartman Photos



Construction is wood frame on concrete slab; redwood shiplap siding, painted off white, with maroon trim. Interior walls are waxed redwood plywood, with natural insulation board ceilings. The waxed terra cotta tile hearth extends around fireplace to form dinette floor; other floors asphalt tile. Note the clerestory lighting

ECONOMICAL HOUSES FOR THE SOUTHWEST

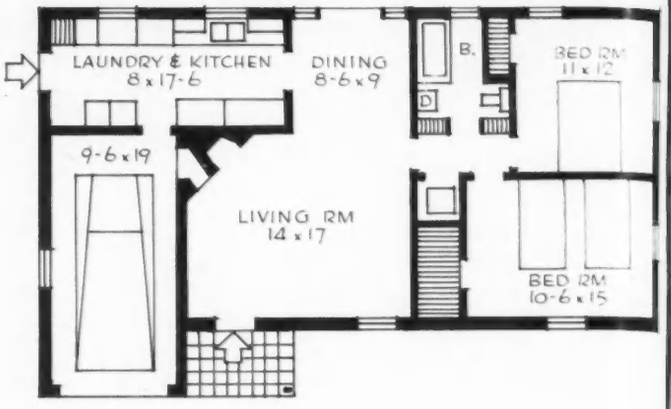
Arthur T. Brown, Architect

SPEAKING of the architect and the very small house (as we were on the preceding page) here are three more examples bearing out the idea that the architect's services pay out handsomely. These simple, economical floor plans might have produced miserable little boxes, except for the skill here exhibited.

The Borden house, exceptionally economical to build, adds a laundry to its little kitchen. The kitchen, by the way, has more cabinet and counter space than usual, and is one of those that is economical of steps as well as space. The house faces south; the projecting garage shields the living room from the western sun.

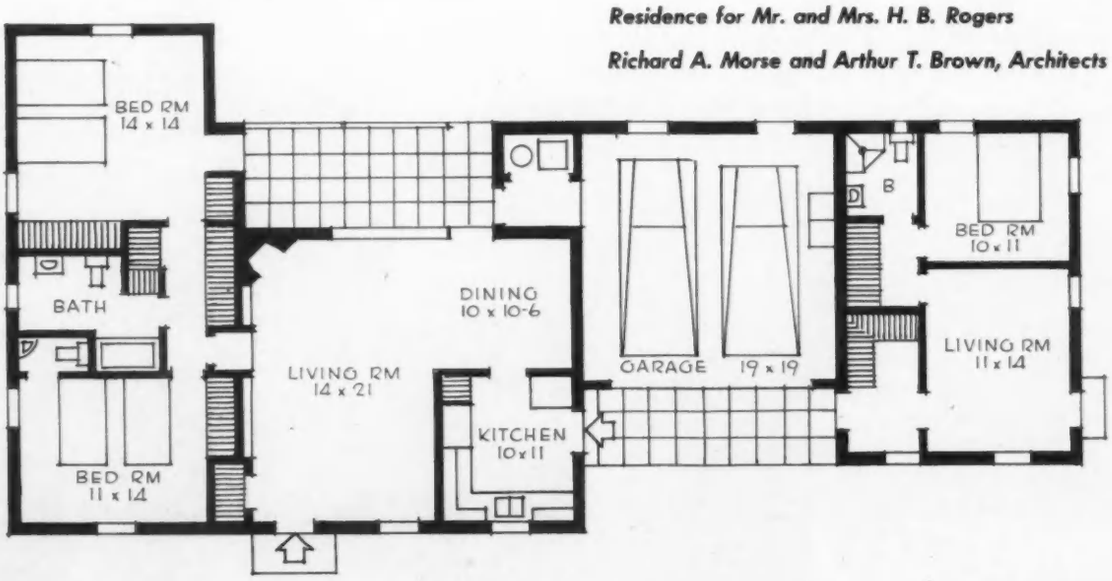
The Lent house achieves its distinction with the long, generous ranch-house porch, which simplifies fenestration and lends a restful note.

The Rogers house, larger but still simple in plan, takes on a "modernized Territorial style." It had room to spread across a 100-ft. lot, stepping down somewhat to conform to grade. Walls are of painted brick; floors of colored cement. The owner has developed a large terrace beyond the garden porch.



Residence for Mr. and Mrs. H. B. Rogers

Richard A. Morse and Arthur T. Brown, Architects



Geyer Photos

Residence for
Alice Borden

Residence for
Mr. and Mrs. Alfred Lent

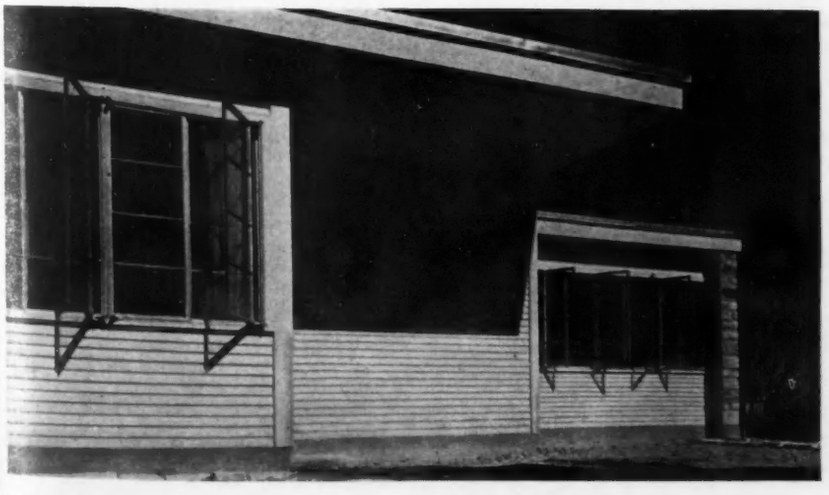
SMALL FARMHOUSE TEXAS VERSION

First of Two Houses for

Mr. and Mrs. George W. Lawrence, Houston, Texas

Arthur Fehr and Charles Granger, Architects

THERE has been much speculation about the possibilities for better houses on the farms, and about generally improving living standards. Most farm houses have gone up with little attention to planning; indeed cow barns have had much more study. This little Texas farm house is certainly not typical of what might emerge from study of the farm problem, for obviously it is for a non-typical farm family, but it does give a glimpse of possibilities. It is compact and economical, and suggests use of native materials. It develops natural views with large window areas, which also open the house to the cooling breezes. The car port and storage shed combination shows one modern version of that familiar busy farm area that usually starts with the back porch and continues to a series of nondescript out-buildings.



St. Thomas Photos

Roof overhangs shelter living room and bedroom from the hot Texas sun, and full-length casement windows open the house to the breeze from the south. The joining of living and dining space gives the breezes full sweep, also permits the dining room to borrow some heat from the circulating fireplace on chilly evenings

HOUSES OR POLITICS?

FACTORS THAT WILL DETERMINE THE VOLUME OF CONSTRUCTION

An address delivered before the Iowa Chapter, A.I.A., Des Moines, October 11, 1946

By Thomas S. Holden, President, F. W. Dodge Corporation

IN view of the vast construction needs of the country, enormous accumulations of planned projects, and the postwar prosperity of which our economy is capable, there is little doubt that the volume of construction activity during the next five years will be very large indeed. It may be larger than in any previous five-year period in the country's history.

It seems to me that at the present moment it is more a question of *how* than of *how much*. The big question is the role the federal government will play in next year's construction program and in the construction activities of the years to follow 1947.

A month or so ago the Under Secretary of Commerce, Mr. Alfred Schindler, in a statement advocating lifting of government controls of business at the earliest possible time, remarked that the economy cannot function properly half controlled and half free. I should like to point out, as strongly as I am able, that the construction industry is at this moment very nearly a hundred per cent controlled.

Present construction industry controls are effected under three legislative enactments, all due to expire on different dates in 1947, unless extended by Congress. The Civilian Production Administration has been allocating critical materials and expediting production; until about six weeks ago it handled permit applications on all nonresidential construction projects, but now has such jurisdiction only over industrial projects. It functions under the Second War Powers Act, due to expire March 31, 1947.

Building material price controls are under OPA, due to expire on June 30 of next year, unless the present shift of public opinion forces earlier liquidation. Rent control, which is also under OPA, may be extended beyond the life of commodity price control by some new enactment of Congress.

Beyond these controls, which apply to all sectors of the economy, are the special powers granted to the Housing Expediter under the Patman Act, which does not expire until December 31, 1947. These powers are so broad that, unless they are modified or curtailed, they will keep the construction industry tied to the government's apron strings some months beyond the time when the rest of the economy is freed.

It is my firm belief that any useful purpose that may have been served by these controls, except rent control on existing housing accommodations, has been accomplished and that their continuation is now hampering production of needed building materials and equipment, pushing more and more of them into the black market, raising construction costs far above what they would otherwise be, and causing new housing to be rapidly priced out of the market it should currently serve.

Although the veterans' emergency housing program is under severe criticism at the present time, it must be credited with some useful accomplishments. It did break the number one log jam that last spring was impeding production of essential materials and equipment, OPA's unrealistic price ceilings. It broke that log jam about two months before Congress itself reconverted the government's price control program into a decontrol program. This action, with concurrent action by the Civilian Production Administration, improved the material production picture very considerably. As a result this year's total construction volume will be larger than would have been possible otherwise. The emergency housing program caused the year's total program to include a larger proportion of residential building than it would have otherwise contained. It must also be credited with a speeding up of training programs and recruitment of workers in the building trades. I strongly believe that all these things could have been accomplished without conferring upon the Housing Expediter the extraordinary powers granted by the Patman Act.

PERPETUATION OF POWER

Assumption and perpetuation of extraordinary powers over the home-building and home-financing activities of the country seem to have been the principal objectives of the proponents of the emergency housing program. The program originated among the economists of OPA. Shortly after passage of the Patman Act came the unsuccessful effort to railroad through Congress the President's Reorganization Plan No. 1, which would have made the National Housing Agency permanent and would have given its administrator authority to "coordinate, supervise, manage and control" the constituent agencies, including FHA and the home loan bank system. Although the long-range omnibus housing bill (S. 1592, the Wagner-Ellender-Taft Bill) failed in the House Banking and Currency Committee, after being rushed through the Senate on a specious emer-

"The time has come when every organized group in the construction industry should make its voice heard as effectively as it can in urging immediate removal of most of the controls that now shackle the industry. I am convinced that the following controls should be removed: price ceilings on construction materials and equipment, price ceilings on new houses, rent ceilings on new rental housing, federal restrictions on nonresidential building."

"One result of the present effort to build new housing priced within the veteran's supposed capacity to pay is to unload today's abnormal transition costs on the class of building least able to absorb them and on people least able to pay them."

---

gency plea, its advocates are still beating the tom-toms for it and citing it as an alibi for failure to produce the kind of housing the veterans want and need the most, rental housing.

The veterans' emergency housing program has not dealt simply and directly with the shortage problem. The obvious solution is to get as many new dwelling units built as possible within the shortest possible time. Since a majority of veterans now require and want rental accommodations, major emphasis in the program should be put on rental housing.

POLITICS, NOT HOUSES

Instead of a simple production program, the Administration persuaded Congress to give the country a political housing program. It was apparently projected as a program to accomplish the following purposes:

1. To win veteran votes.

2. To put across the economic control theories of a certain sector of the Washington bureaucracy.

3. To extend price controls to cover housing units built for sale and for rent.

4. To establish by government fiat a prefabricated-house industry on a national scale.

5. To carry out the ideas of housing theorists on development of new materials through government sponsorship and subsidy.

6. To perpetuate the temporary wartime National Housing Agency with enlarged powers.

7. To subject private housing finance and private-enterprise home-building to the dominating influence of public housing theories.

8. To initiate, under government sponsorship and with bureaucratic planning and control, a continuing housing boom of vast magnitude that would involve our debt-ridden government in money outlays and contingent liabilities running into many billions of dollars.

9. To cause to be enacted in extreme haste long-range housing legislation, regarded by many as being highly inflationary in character, as being strongly tinged with planned-economy philosophy, inimical to the American enterprise system, and, even in respect to some possibly good features, premature in an unstable situation like the present.

These nine purposes are extraneous to the main job of getting houses built. Thus far all have conspicuously failed of any significant accomplishment.

The barrage of publicity that has attended the program has led veterans and the general public to expect far greater results in housing units completed than have been achieved or were possible of achievement. The public is not satisfied with a statistically impressive record of projects started.

The political objectives of the program have failed. It seems to me that it would be an excellent idea, at this stage, to throw these very dubious political objectives overboard and concentrate on freeing the construction industry so that it can produce houses, apartment buildings, and needed nonresidential building as rapidly as our increasing material and labor supply will permit and as economically as possible.

The time has come when every organized group in the construction industry should make its voice heard as effectively as it can in urging immediate removal of most of the controls that now shackle the industry. I am convinced that the following controls should be removed: price ceilings on construction materials and equipment, price ceilings on new houses, rent ceilings on new rental housing, federal restrictions on nonresidential building. Rent ceilings on existing housing should probably be maintained for a time, though the question of raising these ceilings by a moderate amount should be given careful consideration. In lieu of restrictions on nonresidential buildings, there should be inaugurated a new system of priorities for housing projects, to apply to producers and wholesale and retail suppliers with no preference for public housing over private housing. This priorities system should be set for a limited period of time.

It is likely that the American Federation of Labor would support such a program. If the industry's problems were carefully explained to veterans' organizations, national and local, their support might be gained. Real estate, financial and business groups outside the construction industry might also support the movement.

Such a proposal would naturally be strongly opposed on the ground that it would encourage runaway prices, leading to a boom and a bust. I do not believe that would be the case.

It has begun to look as if commodity price inflation has very nearly run its course. Prices of some consumer goods have already declined at the retail level. There

has been some softening of farm products prices, always the bellwether of any broad general price movement. It would not be at all surprising to me if the index of wholesale prices of all commodities reaches its peak within the next six months, barring unforeseen international complications or labor troubles of greater seriousness than I believe likely. A number of economists agree with this opinion.*

With respect to construction materials and equipment, removal of price ceilings would in all likelihood result in market prices over present ceilings but considerably under black market prices. Production of things now retarded by OPA ceilings would in most cases be stepped up. Even if a few particularly scarce items went up considerably, they would not affect construction costs appreciably. Elimination of black markets, of special costs of procurement now prevailing in the topsy-turvy market and of other artificial costs, would tend to lower actual construction costs below what they are today. A few days ago, William J. Levitt, of Levitt & Sons, Manhasset, L. I., one of the largest housebuilding organizations in the country, told me that if controls were removed at an early date he could build houses in 1947 to sell with lots for $6,000 which would be in every way as good as those he is now selling for $10,000, and that he could build a lot more of them. He gave me permission to quote him on this.

So, the big question for next year is whether the construction industry will be freed from stultifying controls or whether it will have to wrestle with ideological and bureaucratic ineptitudes until the Patman Act expires in December.

Let us now turn from our preachment on government controls and have a look at the record and consider its significance.

BUILDING VOLUME HIGH, BUT SLIPPING

Building and engineering contracts awarded from January 1 through September 22 of this year in the 37 eastern states amounted to $5,797,062,000, as recorded by F. W. Dodge Corporation. This was 75 per cent greater than the total dollar volume of contracts let in the entire year 1945. It is now evident that the full year 1946 will show the largest percentage increase that has ever been recorded for any year over the preceding one.

Judged superficially, on the basis of mere statistical comparisons, this figure on work started thus far in 1946 presents a very impressive picture. However, it can be argued with much reason that a smaller volume of starts would have permitted more satisfactory progress in filling the most urgent construction needs of the country. Actually the volume of starts was too great to permit of a normal rate of completion under the existing market situation aggravated as it has been by political interference.

The congestion and confusion created by a too rapid rise in contract volume in March, April and May resulted in a setback in the summer months. In round numbers the recent monthly contract figures have been as follows: May, $952,000,000; June, $808,000,000; July, $718,000,000; August, $680,000,000. Advance September figures indicate that the month's total was probably no larger than that of August. While the peak rate of May could not possibly continue, it is significant that the successive cutbacks in nonresidential building, as ordered by government officials, did not bring about an increased rate of housing activity. Residential contracts declined more, percentagewise, than did nonresidential contracts.

Next year's total construction volume should, in any circumstances be measurably larger than this year's, on the assumption that production and supply of materials will continue to increase. I do not anticipate strikes and work stoppages in key producing plants on the scale that we had them the first part of this year. In making this optimistic prediction, an important possibility should not be overlooked. If price controls and black markets are unduly prolonged, causing continued increases in actual construction costs, more and more home buyers and investors could be priced out of the market. If indeed we achieve a competitive buyers' market in most materials some time next year, skilled labor supply may become a more critical factor than material supply.

I question whether the announced 1947 quotas for the veterans' housing program can be reached next year. I do believe relaxation of controls would permit a considerably larger volume both of housing activity and nonresidential building than continuance of the present conditions would make possible.

NO SERIOUS SLUMP EXPECTED

If there is a definite recession in general wholesale prices between now and the middle of next year it will probably be accompanied by a minor recession in general business. I personally do not expect the price drop to be severe or prolonged or the business recession to be prolonged. I look for a readjustment and comparative stabilization of the price structure rather than a real business slump.

I think it is quite possible that, with controls and restrictions unmodified, construction itself might decline during a portion of 1947. With the lifting of restrictions as outlined, I believe it quite possible that construction activity could be maintained at very high levels right through a minor recession in general business.

Whatever may happen between now and the end of next year, the Patman Act will expire December 31. Presumably the years to follow will be years of full postwar recovery, with mounting construction volume for an extended period.

Many people expect a slump after current shortages have been taken care of. This is by no means a foregone conclusion. After World War I, shortages were taken care of by the end of 1924. Instead of a slump, which many people expected, construction activity rose to higher levels and the industry enjoyed five years of the largest peacetime volume in its history. The reason was that the postwar recovery set the stage for a vast in-

* See economist symposium on page 96.

dustrial expansion, in which the rapid growth of the automotive industry was the most conspicuous feature. Who knows but that the opportunities for economic expansion in the future may not be even greater than they were twenty years ago? The very life and vigor of the American enterprise system is its capacity to expand; it does not need or want a continuous sellers' market.

THE SHADOW OF FEDERAL CONTROL

The question arises as to whether in the recovery years after 1947 the construction industry's activities will be largely programmed, supervised or controlled by the federal government. Insistence by the Housing Expediter and the NHA on enactment of the Wagner-Ellender-Taft Bill as a primary feature of the current emergency program is an attempt to accomplish that very purpose.

Aside from the specious emergency plea, the supposed need for this comprehensive, long-range housing legislation was presented to Congress and the public by means of a quite fanciful picture of the long-term housing needs of the country, the NHA estimate of 1,260,000 housing units a year for 10 years following the war. This figure and even larger ones have been repeatedly cited by proponents of the Wagner-Ellender-Taft Bill. It is 80 per cent higher than the average annual number of units actually produced in the postwar decade of the 1920's.

One of the factors in the current situation is government-inflated housing demand. As an economic factor, aside from its merits as meeting the needs of veterans, the liberal financing provisions of the G. I. Bill of Rights inflate demand. Extravagant promises made by the clever salesmen who put over the emergency housing program and generous issuance of priorities in the earlier months also tended in that direction. The Wagner-Ellender-Taft Bill proposes a continuous inflation of housing demand. This proposal envisages a continuous sellers' market in the housing field with little stimulus to improvement or cost reduction by the private home-building industry. Why should the builders bother to produce better houses for less money in an eternal sellers' market with a large proportion of costs absorbed by government subsidies or artificially reduced interest rates?

It is well to remember that no government which has promised its people low-priced automobiles has ever made good on its promises. It is also well to remember that no private automobile company ever made cheap cars because it was sorry for people who had to walk or for people who could only afford second hand cars; they made them cheap in order to broaden their markets. Also, it is to be noted, the automobile manufacturers found that a stable, well-organized used-car market was essential to the functioning of the market for new cars. They did not have a lot of government experts telling them that everybody currently in the market had to have a brand-new car.

I am confident that after government controls are lifted and the transitional adjustments are made the construction progress of the late 1930's will be resumed, on a bigger and broader scale. It is a matter of record, according to the Census Bureau's Survey of November 1945, that considerable progress was made in improving the nation's housing conditions between 1940 and 1945, even under wartime conditions.* If the present efforts to establish a planned economy are defeated, I fully believe the present transition problems will be seen in perspective as mere growing pains of postwar recovery.

While our postwar adjustments are far from completed, it seems to me they have made very substantial progress, all circumstances considered. Production of essential materials has increased measurably and will increase further, even though we may have some more work stoppages. Recruitment of building labor and training of apprentices have made notable progress. I think we can count on such increases of productive capacity for materials and equipment as may be needed for a full construction industry recovery. It is quite impossible to see any reason why this country cannot, under the stimulus of prosperity, vast demand and free competition, produce all the materials needed, both in quantity and variety, for building every legitimate dwelling unit, school building, theater, hospital, factory and highway that is wanted. We will meet our needs faster than any other country. However, the G. I.'s and all the rest of us will have to be a little patient. We cannot all at once make all the postwar adjustments we have to make and build all the structures we need. We can do a better and quicker job than otherwise if we can speedily rid ourselves of the government controls that perpetuate the unbalance of the market and delay manufacturing and building operations. Producers and builders will begin to reduce costs just as soon as prices can get a workout in free competitive markets, as soon as labor in the plant and on job sites will deliver a day's work for a day's pay. Our construction needs will continue to grow, with possible temporary interruptions, just as long as our economy expands, our living standards rise and our social, educational, and community needs remain unsatisfied.

> MORE than a year ago OPA was strongly urged to exempt new rental housing from rent ceilings, in the interest of encouraging early starting of apartment projects in large numbers in the metropolitan centers of the country. To be sure this would not have produced cheap accommodations. But every apartment suite added to the existing supply would ease the housing situation for some family. Suites vacated by those who could afford the rents charged for the new ones would become available to other families. The veteran who could establish his family in good, previously used, quarters at a rent he could afford to pay and would then wait until 1948 or 1950 to buy a house, might fare much better in the long run than he would if forced by desperation into a purchase in the present market.

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* (Summarized on page 91, Architectural Record, October 1946)

ECONOMISTS FORESEE END OF PRICE INFLATION IN 1947

Mild business recession expected by most to accompany decline in prices, with employment not seriously affected

GENERAL commodity prices will reach an early peak and then turn downward in the opinion of a majority of the 72 non-government economists participating in a survey conducted by Thomas S. Holden, president of F. W. Dodge Corporation, the findings of which were made public recently.

The group polled include economic consultants and economists connected with business corporations, financial institutions, universities and economic research organizations.

Fifty-three expected the peak to occur and the general price recession to start before the end of 1947, one expected it within 18 months, while 12 expected it after the end of 1947. The remaining six commented on the price situation without giving specific answers as to the time when the peak of the current movement may be reached.

All but three of the economists who expect a price recession before the end of 1947 anticipate the downswing in commodity prices to be accompanied by a recession in business activity, though only one of the 50 expects such business recession to assume serious proportions. Twenty-three of them characterize the coming recession as "mild," 24 of them as "moderately serious." A majority (28 of the 53) do not expect serious unemployment; nine expect unemployment of moderate seriousness and 12 expect serious unemployment. About half expect buyers' strikes, and about two-thirds expect inventory troubles and reduced business profits.

A composite of the views expressed on the timing of the price and business recession follows: consumer goods would reach a price peak and turn down during the spring of 1947, building materials around the middle of next year, other durable goods in the second half of 1947. Eighteen of the economists expect the turn in consumer goods prices before the end of 1946. With regard to duration of the downswing, two-thirds expect it to last less than 12 months in consumer goods prices, 60 per cent expect less than 12 months of downswing in building materials prices, and 55 per cent expect less than 12 months of declining prices in durable goods other than building materials.

Pointing out that the Bureau of Labor Statistics' index of wholesale prices of all commodities stood at 128.4 on August 24, the economists were asked to estimate the extent of such rise over that figure as they might anticipate by the end of 1946, and by the time the index reaches its anticipated peak.

Among the 53 anticipating a price peak before the end of 1947 the extent of rise in the general index to the end of 1946 was as follows: five anticipate a decline from the August 24 figure (128.4), eight anticipated zero increase over that figure, 28 anticipated rises ranging from two to nine points, and seven anticipated a rise of 10 points or more. The average of all the answers was about five points increase.

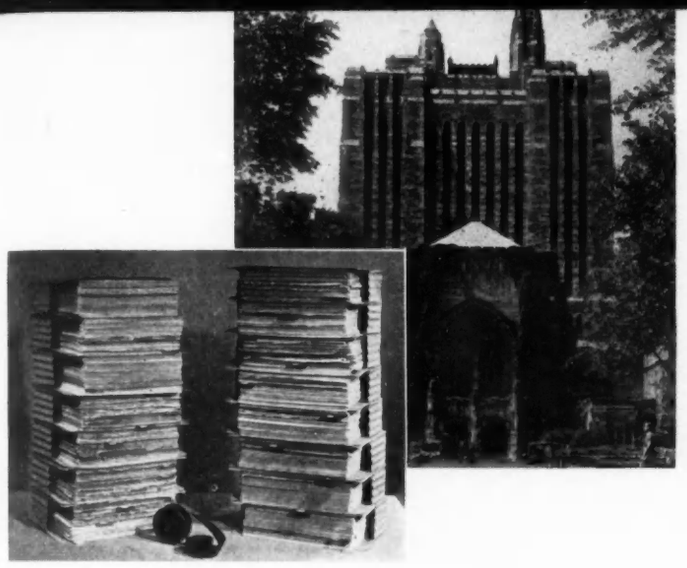
On the question of the number of points the general index would rise from August 24 to the anticipated 1947 peak, the answers were as follows: no increase, seven; increases ranging from two to nine points, 16; increases from 10 to 15 points, 13; increases of more than 15 points, 10. The average of all the increases indicated was a little under 10 points.

With regard to building materials prices, 32 of 42 answers indicate a smaller percentage drop from the peak than would occur in general commodity prices. A number qualified this statement by saying the drop would be less if measured from the official price index (which registers OPA ceiling prices) but greater as measured from actual current prices being paid in the market.

The minority of 12 who expect the price peak after the end of 1947 naturally expect larger price rises than do those of the majority group. The average of increases to the end of 1946 expected by the minority is 10 points, the average of expected rises to the price peak was about 40 points.

As a general conclusion it may be stated a majority consider that commodity price inflation has very nearly run its course, while the minority expect it to continue into 1948 or beyond.

The six economists who refrained from specific answers to the questions asked cited uncertainties in the foreign situation, domestic politics, government controls and union labor attitudes as reasons why no answers could be hazarded.

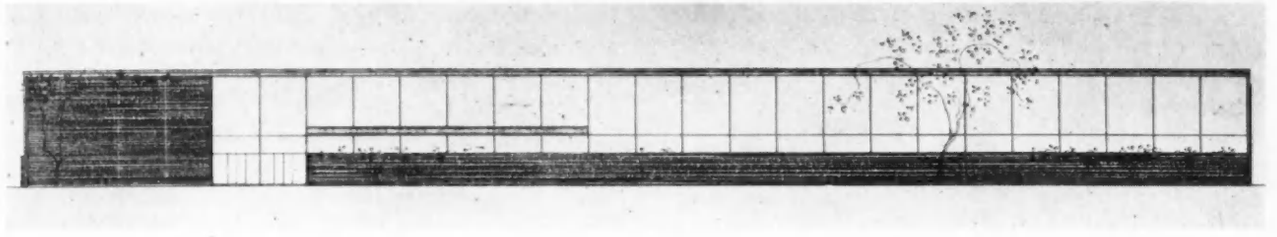


From cluttered bulk to clear compactness

UNIVERSITY LIBRARIES

ARCHITECTURAL RECORD'S

BUILDING TYPES STUDY NUMBER 119



UNIVERSITY library building has become urgent. In 1945, a group of university librarians, finding themselves in charge of a $25,000,000 aggregate building program, formed a Cooperative Committee on Library Buildings, undertook an extensive survey with the aid of architects and engineers, and expect to publish their study in book form early in 1947. Foundation-sponsored, the content of this study may not be released in advance. Yet in view of the need for early information, since many other library buildings are on the boards *now*, the librarian and architect members of the Committee have been generous in supplying the RECORD with the preliminary plans of those libraries which are sufficiently advanced for publication, and with discussion and guidance. It is on the advice of these men that the RECORD makes its own contribution in concentrating on technical factors: the development of *automatic equipment* to meet the crisis in storage and reference, and the development of *modular construction* to meet the certainty of change.

"The summation of human knowledge is being expanded at a prodigious rate, and the means we use for threading through the consequent maze to the momentarily important items is the same as was used in the days of the square-rigged ships" — Dr. Vannevar Bush.

In a keen and rather startling article, which appeared in the *Atlantic Monthly* for July, 1945, Dr. Vannevar Bush explored the relationship between "thinking man and the sum of our knowledge." More particularly, he made positive forecasts of the expedients by which future scientists and researchers will record, select, and manipulate information. These might have appeared highly imaginary to the laymen, had there not stood behind them the experience of the Director of Scientific Research and Development, and the massive authority of the Manhattan Project, on which 6,000 scientists collaborated under his direction. The release appeared just before Hiroshima, and should be made required reading for the library architect, as it has been for the librarian.

Dr. Bush gives us a baseline in the future from which to look backward at the present. Listing current media for preserving thought, he quickly indicates that books and printed matter will take a rapidly diminishing share since we are in the midst of a technical revolution comparable in scope to the original invention of printing. Recording expedients already in common use include, he says, writing by hand or machine, photography, and subsequent printing; film used directly, wax disks, and magnetic wires. "Even if utterly new recording procedures do not appear, the present ones are certainly in process of modification and extension."

Projecting photography, for instance, to a "logical if not inevitable" outcome, Dr. Bush foresees a scientist who will wear on his forehead a camera "lump little larger than a walnut," taking 100 exposures 3 mm. square to the roll by merely looking at what interests him and squeezing a cord reaching down his sleeve, without otherwise moving a hand. Later, by dry processes, a selection including notes can be incorporated into his permanent record. The microfilm process used will be such that, using a linear factor of 100 instead of the

present 20, "the Encyclopedia Britannica could be reduced to the volume of a matchbox." A library of a million volumes could be compressed into one end of a desk, and it might even be possible to remove a library containing reproductions of all preservable printed matter since the invention of type, in a single moving van. The cost of materials for the first such Britannica, a nickel; for duplicates, a cent.

Similar improvement is forecast in other, non-photographic means of graphic duplication. In place of the television screen, there could be used an iodine-sensitized sheet, to be scanned not by the electric needle but by a discharge of electrons, yielding permanent usable images at any desired distance. Dr. John Burchard, director of libraries at Massachusetts Institute of Technology, has proposed library use for such means. He suggests that individual libraries cease their competition for rare items (99 per cent of research materials are used by 1 per cent of library visitors); that they collaborate in setting up central depositories, from which scholars could "borrow" by simply arranging to see the material — or reproduce desired parts — by television. The scientist's no less spectacular predictions in the realm of transcribing sound must be passed over, except to remark that they involve not only the further development of magnetic wire or tape recordings but the possibility of a kind of typewriter activated directly by speech (based on Bell Laboratories' "Vodor").

The crux of the matter is that all such instrumentalities added together will merely make the situation of the library worse: for "we can enormously extend the record; yet even in its present bulk we can hardly consult it. This matter involves the entire process by which man profits from the inheritance of acquired knowledge. The prime action of use is selection, and here we are halting indeed."

Basically, selection involves producing a code that can be worked in reverse for rapid screening. A precedent for badly needed automatic methods is found in the punch-card, push-button, electric-eye equipment now used in personnel offices, chain stores, and the FBI, to fish out desired information. In the FBI, fingerprints are matched in a few minutes against five million on file. Again, an automatic telephone exchange, in response to a numerical code request, selects and connects one from among a million possible stations in a few seconds' time.

Unfortunately Dr. Bush's masterpiece of imaginative projection, a system of assembling pertinent references which he nicknames "memex," would seem better suited to the individual worker than to a library as a whole. Yet the component elements of "memex," whereby whole groups of items could be quickly called up by code, inspected, screened, reduplicated and recoded around a new subject, could be lent as "by-trails" to friends, or built into spot encyclopedias dealing exhaustively with some subject in a small corner of space, is of utmost relevance. There is no sanctified perfection in the present-day library card!

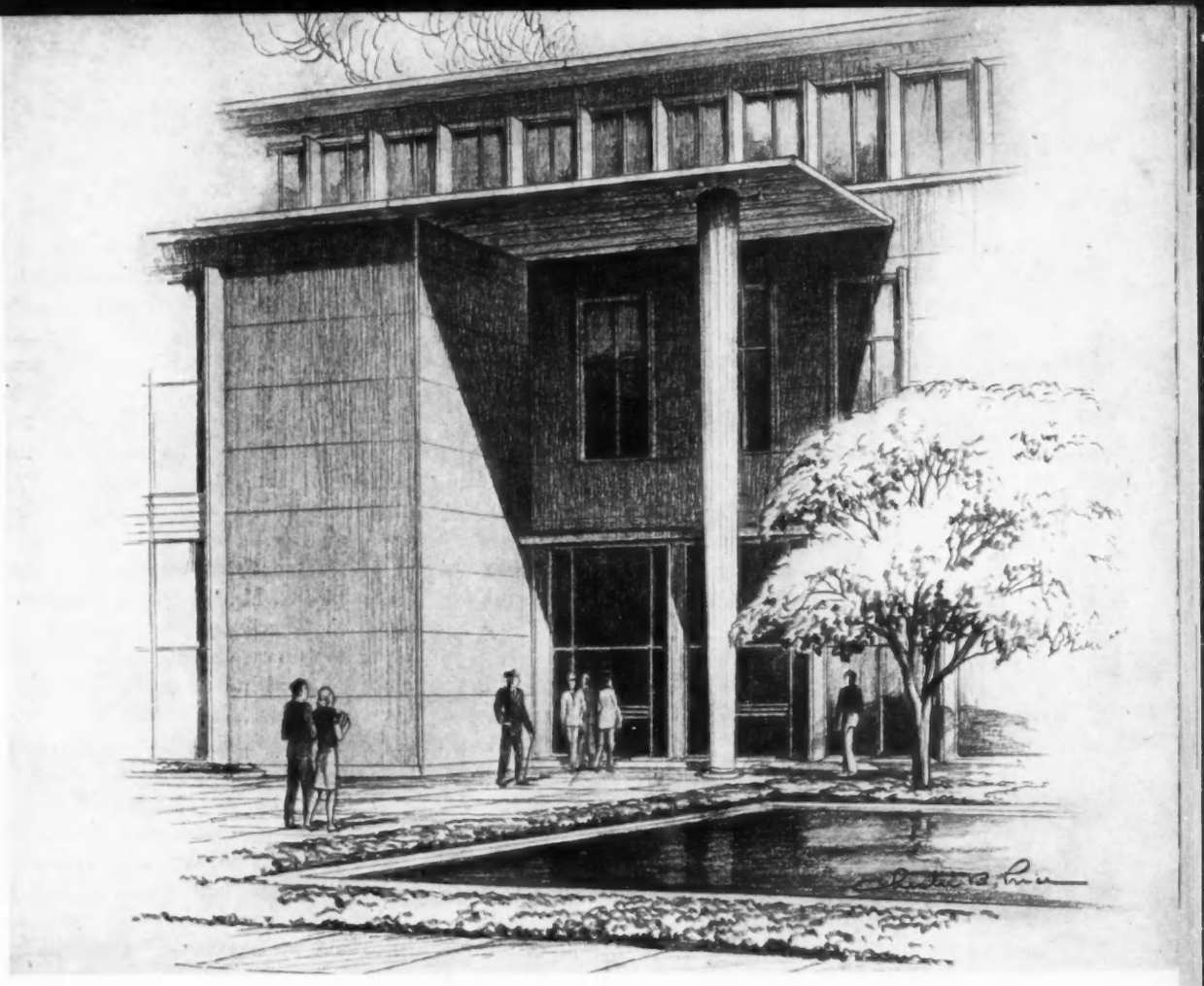
If the baseline is shifted from the future to the immediate past we find corroboration of the need for profound change in the degree to which familiar methods are leading into crisis. The crisis facing librarians this minute is threefold. It relates, first, to *bulk* — the multiplication of books beyond the capacity of even our great Gothicized warehouses to hold them. It relates, second, to *diversification*. The new media for recording knowledge: the microfilms, microprints, slides, films, sound recordings, telecasts, and the like, cannot long be accommodated in holes and corners. These poor relatives are about to take over. It relates, third, to *reference* and *manipulation:* the fact that so much knowledge lost in libraries can scarcely be refound, and once found is so difficult to manipulate, i.e., to move promptly and without excess baggage to the point where it is needed.

Architecturally, the problem of bulk translates itself into *multi-ordinal growth:* the possibility of expansion upward, downward, or maybe all around. It is not as if libraries had not previously been planned for growth; but considerations of mere vanity have critically limited the scope and the direction. Mr. Burchard complains that the library, standing nearly always at the center of the campus, has been treated as a show-place, or *the* show-place of the institution, with self-important masses and frozen façades which "on the one hand could not readily be altered to accommodate new or changed activity and, on the other, could brook no unforeseen addition without having their form spoiled." The pompous inadequacy of such an approach must be judged against the fact that collections, at the present rate, grow in geometric ratio, tending to double even in large institutions every 16 years.

To say that multi-ordinal growth requires a more self-effacing and serviceable method of design does not mean that growth is necessarily unlimited in a single building unit. Thus, as books become too unwieldy, we get microfilm. By microfilm standards, perhaps the Yale Library is already too large! The best procedure is perhaps to have a master plan, sufficiently detailed to be realistic, for the largest building the institution now guesses that it may need within, say, 25 years. Then to build toward this plan, using industrial techniques.

Architecturally, the crises in diversification and reference imply *planning for unforeseen change.* This is not so difficult as it sounds. Whether the new instruments are those of recording or of finding knowledge, they will be designed to human scale. The architects whose work appears on succeeding pages have worked out the basic approach. It is to provide a structure that permits the maximum flexibility in rearrangement. Their method is modular design. None better has yet been found.

It is because of the crisis in library methods, the importance of the new and projected technical instruments, and the need for buildings devised basically to fit, that the RECORD concentrates, in this Building Types Study, entirely on this technical side. There are many other sides to library planning. Some will appear in discussion of individual buildings. They are also widely discussed in library literature.



TECHNOLOGY MADE HUMAN

The Charles Hayden Memorial Library Designed for The Massachusetts Institute of Technology at Cambridge

Voorhees, Walker, Foley & Smith, Architects and Engineers

As projected by the architects, the Hayden Library quite manifestly wears its technical proficiency with graceful ease. Closer examination will show that in arrangement it is as convertible as a loft; in construction it is as modular as an industrial laboratory; in equipment it is complex; yet in use it converts these media of an industrial age into a setting for study that is humanly inviting, and urbane.

The program itself presents a dual, or multiple, set of aims. There was demanded a library, as the architect says, "servicing both the background of humanities, and the scholarship attendant upon many special fields." At one and the same time, such a library must lure the underclassman into a broader pursuit of knowledge and of thought, and must supply the technical scholar with the means of advanced research. In the words of Mr. Burchard, the director of libraries in charge, there are four functions to be served; "a) the building must offer a tool for the undergraduate and the scholar in science and engineering; b) a tool for the student of social science and the humanities; c) it must offer extra-curricular fare in non-scientific fields to whet the student appetite; and d) it must foster new methods of librarianship through research."

In combining all these four functions in one shell, the architects made use of certain expedients that are unique. For one, they discovered the high potentialities, for planning and for impression, of the corridors on which M.I.T. is strung; for another, they contrived ways to keep their highly developed service elements out of the way for the pleasant and efficient use of space; and for a third, they used the new artificial devices of environment-conditioning with the natural old ones in new harmonious blends.

BASIC RELATIONSHIPS

On these two pages may be seen the inward structure and outward setting upon which the Hayden Library is to be based.

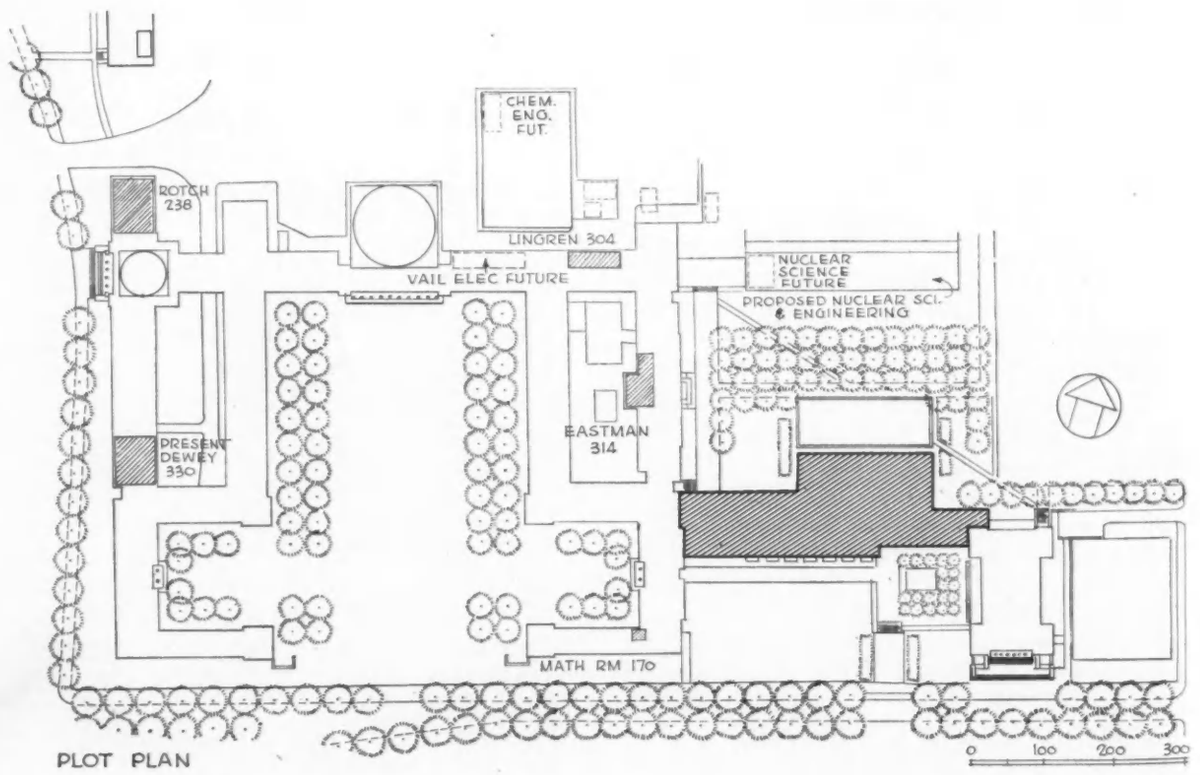
The internal skeleton appears clearly in the structural plan across-page. Each floor is a great free space, like a warehouse or a loft. The only interruption is a permanent service core composed of the stairways, the elevators, the book-lifts and the toilet rooms. In order that structural columns may occupy a minimum of space, they are relieved of any secondary duties beyond carrying the electrical conduits. Air conditioning ducts, in the main body of the building, are brought up through exterior walls, in a manner which will be described fully further on.

The grid of fine lines represents standard "bays" with the columns at the intersection points. It will be noticed that bays are of two sizes. In the main east-west wing their dimension is larger — 27 ft. by 31 ft. 6 in. — and adapted primarily to reading rooms, though they lend themselves to the introduction, at any future time, of any desired stacks. In the northerly L, whose primary use for storage can scarcely be expected to change, they are smaller — 27 ft. square — and adapted primarily to stacks, studies, and the individual study cubicle which librarians call a "carrell." The reason for a uniform ceiling height of 14 ft. 8 in. will appear in a moment. Together, these standard bay dimensions create two sizes of empty cubage — the all-important "modules." Their sizes give them almost infinite convertibility.

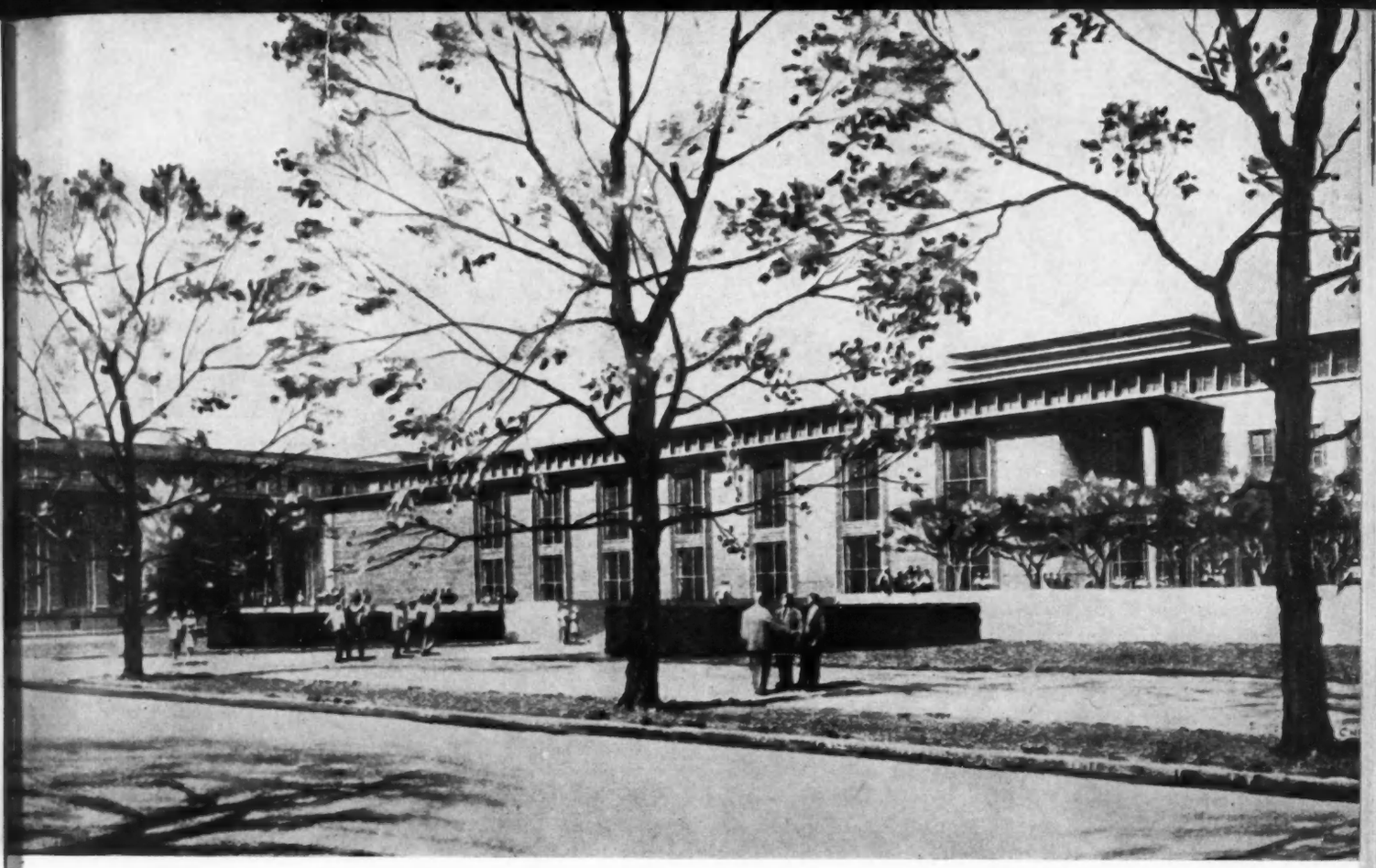
The external relationships are indicated on the plot plan at the bottom of this page. These relationships, too, are critically close. The main shaded area represents the new building containing the new general library. The smaller shaded areas represent the branch libraries devoted to specialization. Between the two the relation is intimate. The new library houses the central administration; it acts as a repository for older and "fringe" material dealing with the specialties; it contains the master index.

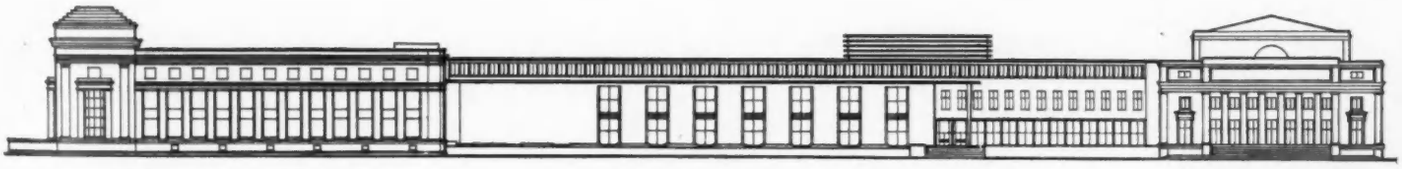
The connection is by corridors. All M.I.T. is strung on corridors. Mechanically, this need for through passage set the new building height. It was more important than the mere height of stacks. Fortunately it lent itself to good human scale. The full height made good reading rooms. The half-height (a net of 7 ft. 2 in.) was adequate for stack galleries and carrells. (The vertical section appears on page 106.)

Yet mechanical solutions did not content the architects. They capitalized the corridor scheme in terms of plan, composition, and drama. In composition it permitted the new building to be deftly tied in with the older ones despite the older eclectic style. In plan it provided a "backbone," subdividing large areas and making them easy for a newcomer to find. But the most effective use was a use as drama, as showmanship, which is worthy of closer inspection.



PLOT PLAN





BUILDING NUMBER TWO HAYDEN MEMORIAL LIBRARY WALKER MEMORIAL

SOUTH ELEVATION

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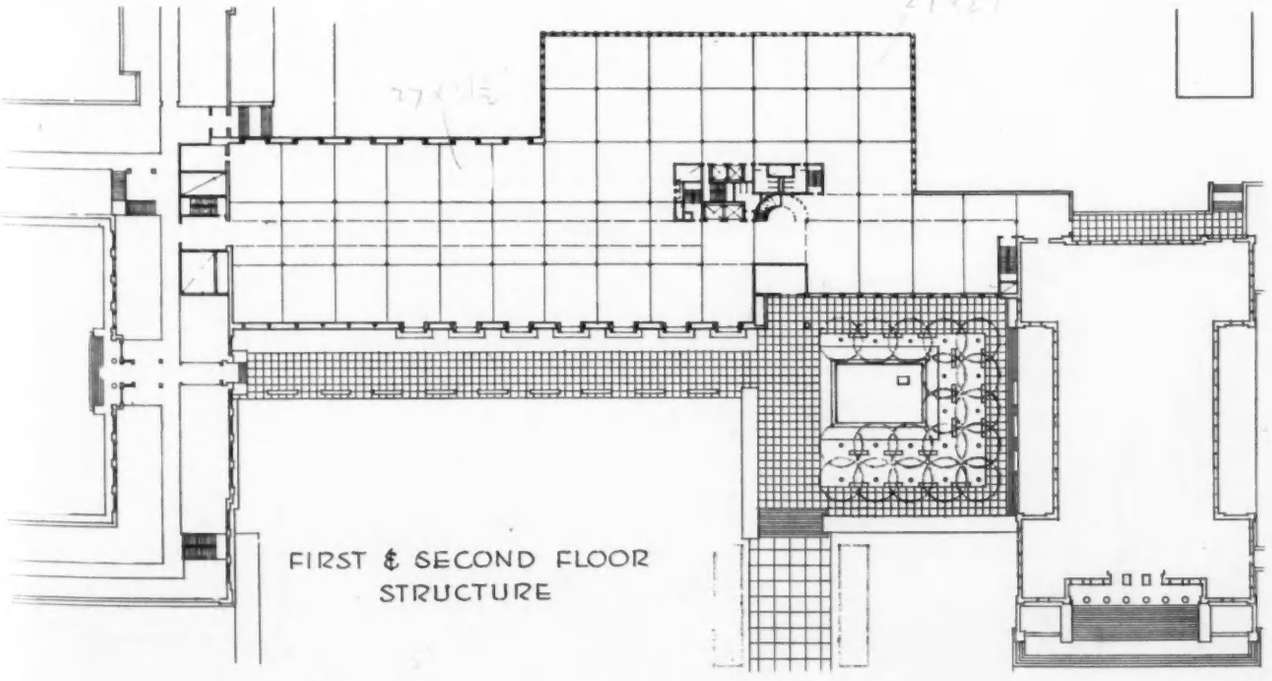


FIRST & SECOND FLOOR STRUCTURE

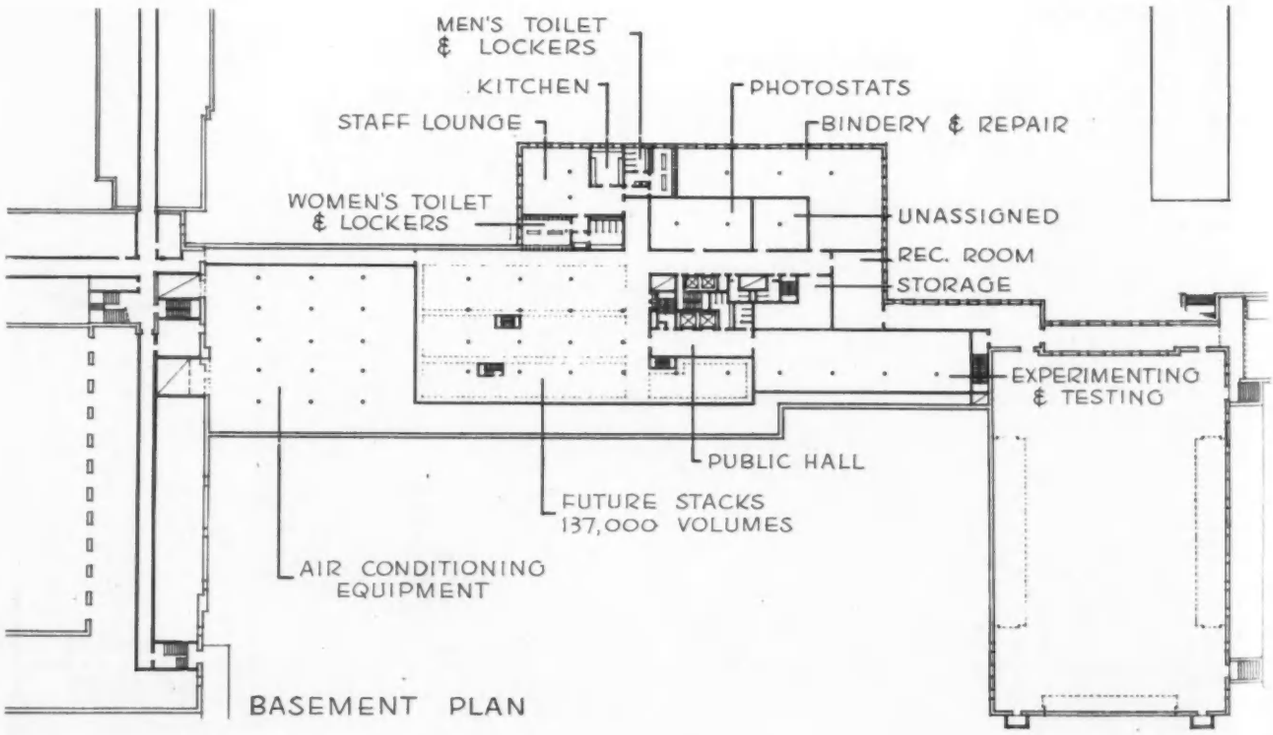
It is by reference to the corridors that the first-floor plan (across-page) may most easily be grasped. The corridor, as we have just seen, extends all the way through the entire institution. On its way through the Hayden Library it will conjoin the working areas of M.I.T. with the recreational area. The opportunity has not been missed. The corridor has been turned, in the phrase of the director of libraries, into an "avenue of culture" where the student will naturally pass. No effort is spared to convert the entrances to reading rooms adjoining into effective, though dignified, show rooms. Reading from left to right, the student on his way passes first the Dard Hunter Paper Museum on his left and an exhibition room on his right. The reading rooms next following, on both sides, pertain to general culture. Their entrances are made inviting by glass fronts. Finally, just off the pool at the entrance, in the most attractive natural situation of all, is the recreational reading room (marked "Cilley Collection" on the plan) where students may read for pleasure and, in a friendly atmosphere, cultivate what the architect calls "the beginnings of self-discipline." The entrance itself, with its pool and low trees, is arranged as a reading and lounging terrace "to give pleasant and inviting surroundings on sunny days."

The basement (see plan below) is a center which by nature is largely technical. It is here that, potentially, the library can become a laboratory in itself. Apart from the usual air conditioning and other service equipment, the basement contains not only future stack space but also the facilities for binding and repair, for photostats, and — it may be interpolated — for the nucleus of that future growth in automatic and time-saving devices for which the development of libraries is so urgently calling.

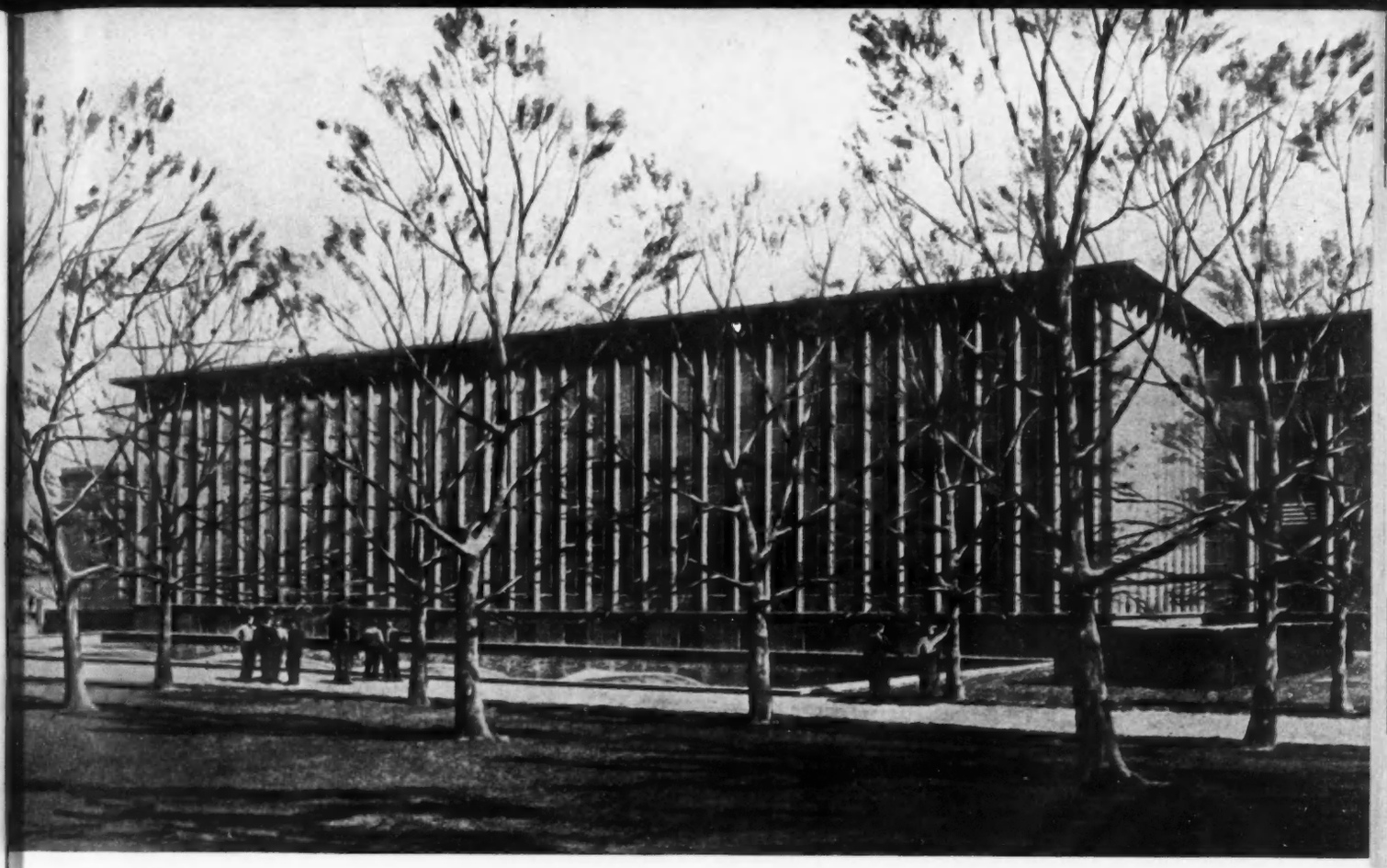
The basement is not isolated to itself. It may be noted that it is connected at regular intervals with the first floor by stairs leading directly into the reading rooms.

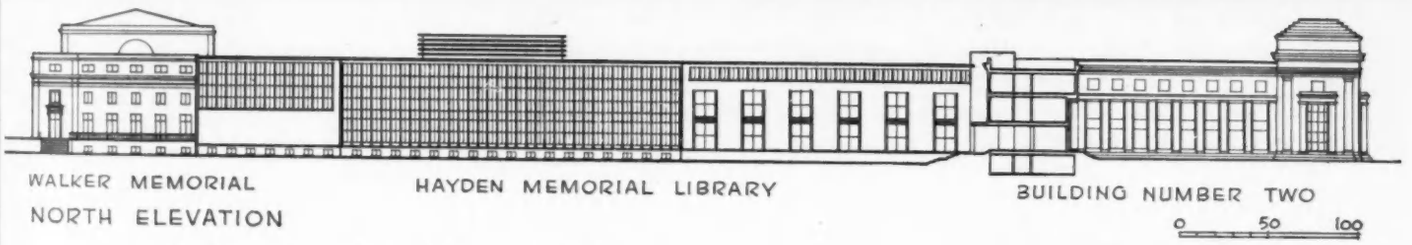
These stairs may be used in a variety of ways, depending on how the library may in the future be used, and depending also on the judgment of the undergraduate readers. Manifestly they are offered the opportunity to duck down, after a period of concentrated reading, for a moment's recreation (presumably at some such pastime as table tennis). Since the same opportunity exists whether reading has been concentrated or not, the opportunity is real for what the architect has already been quoted as describing with the word "self-discipline."

The second floor combines further reading rooms with central library facilities, the third gives space to studies, offices, and the chance for future growth.

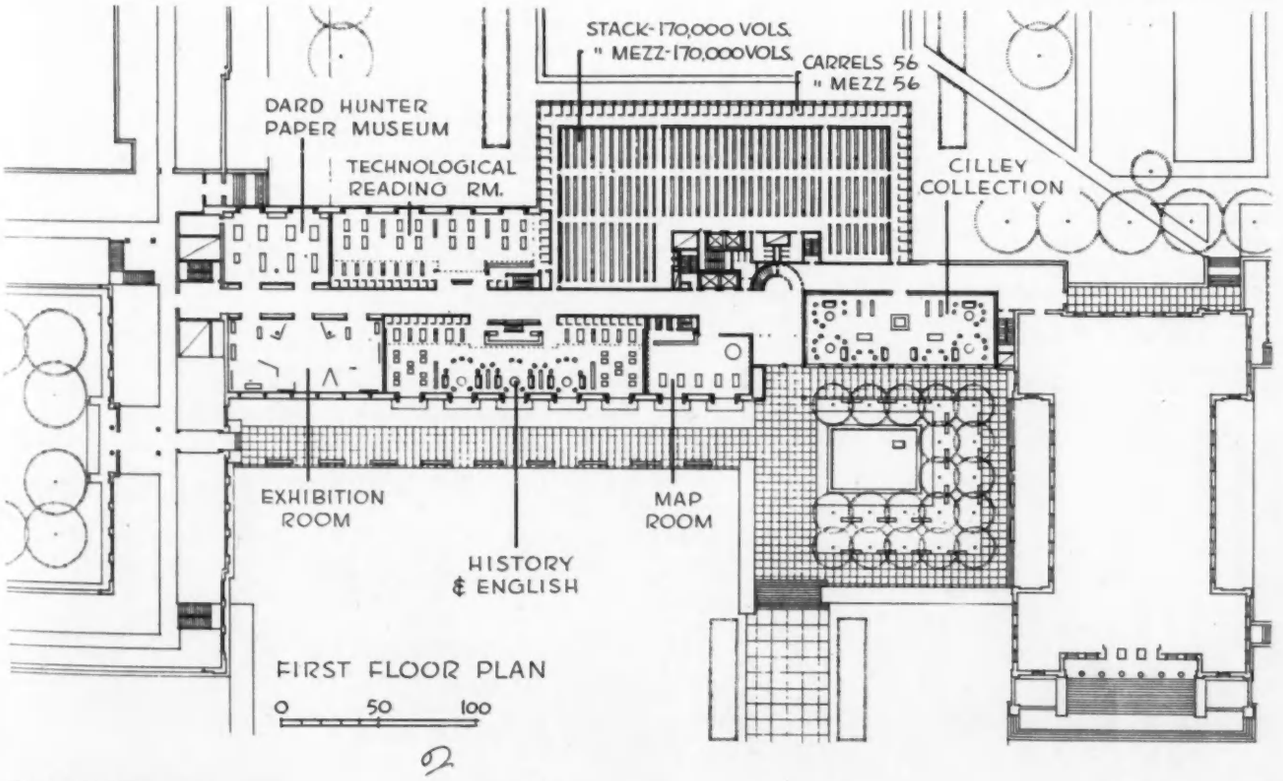


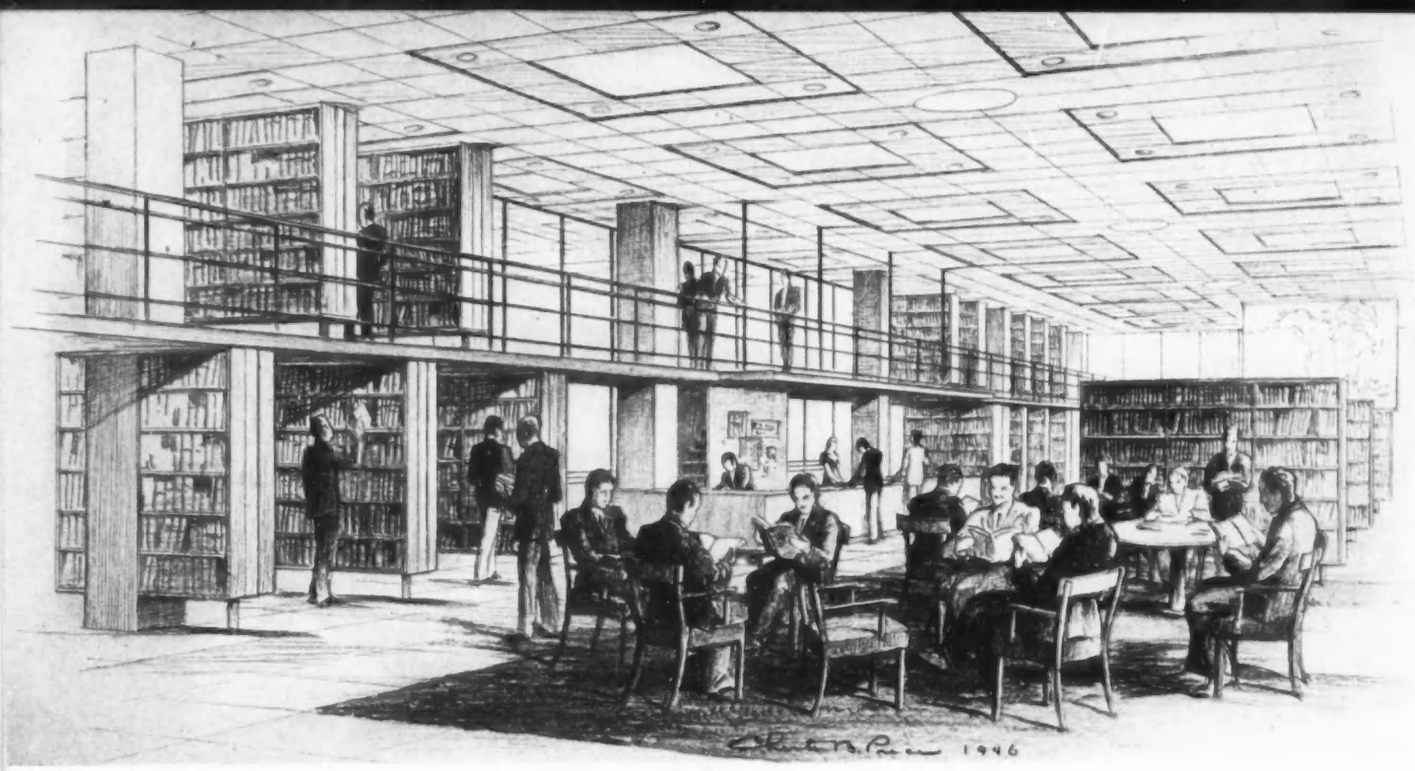
BASEMENT PLAN



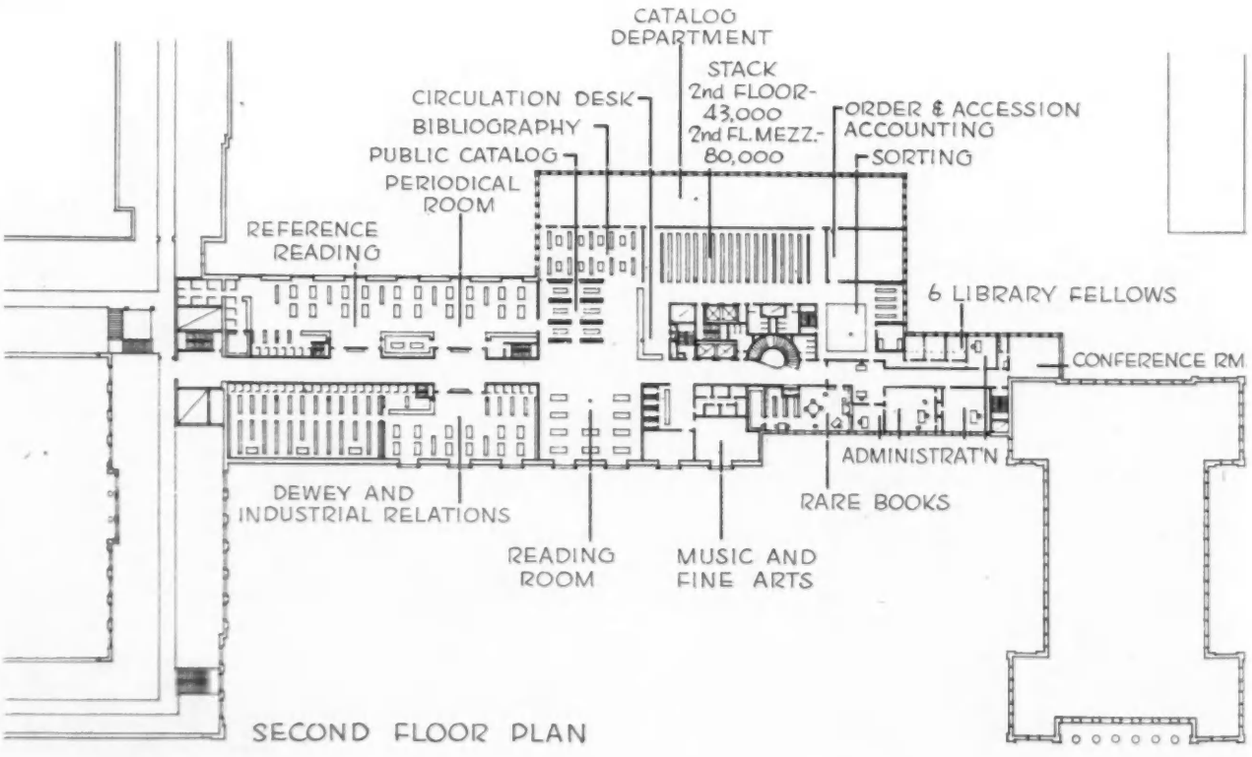


NORTH ELEVATION

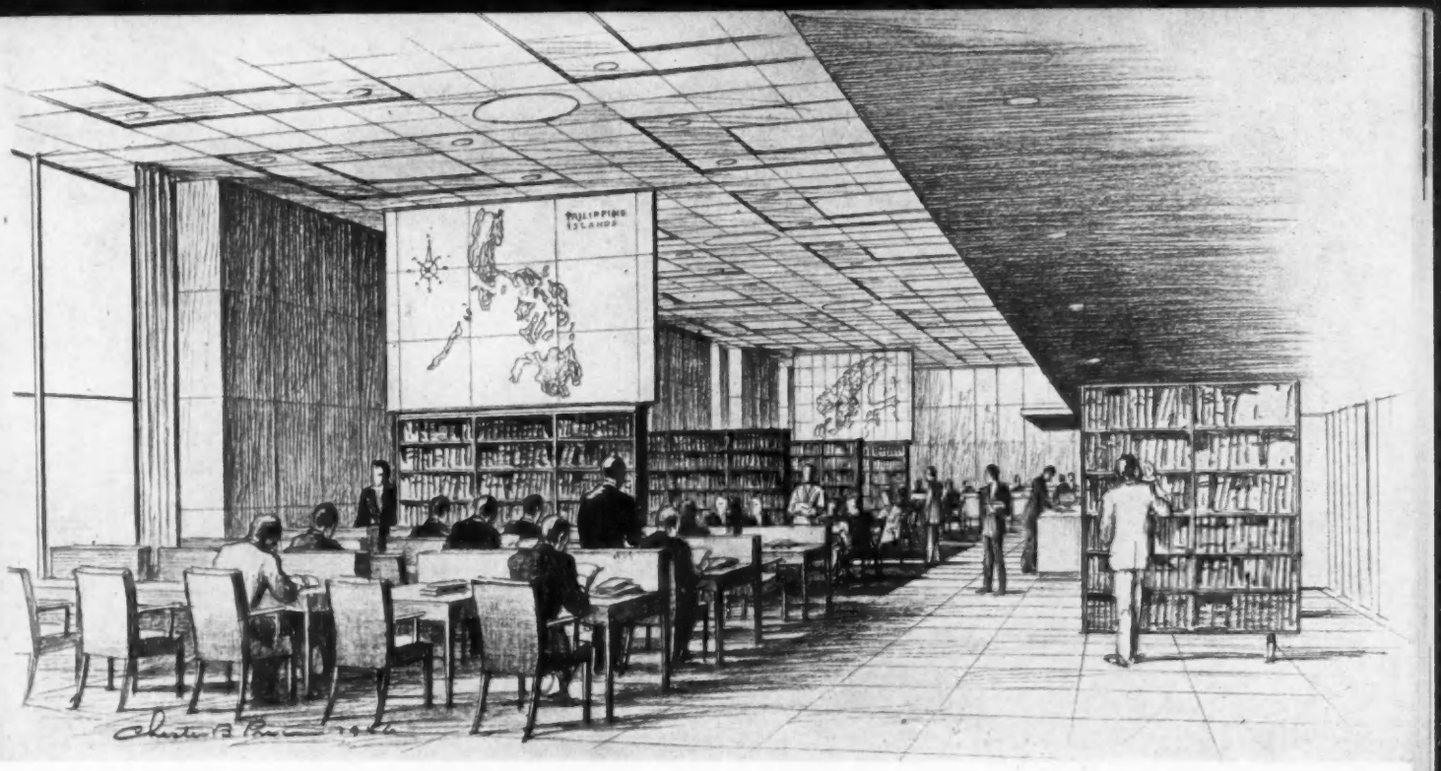




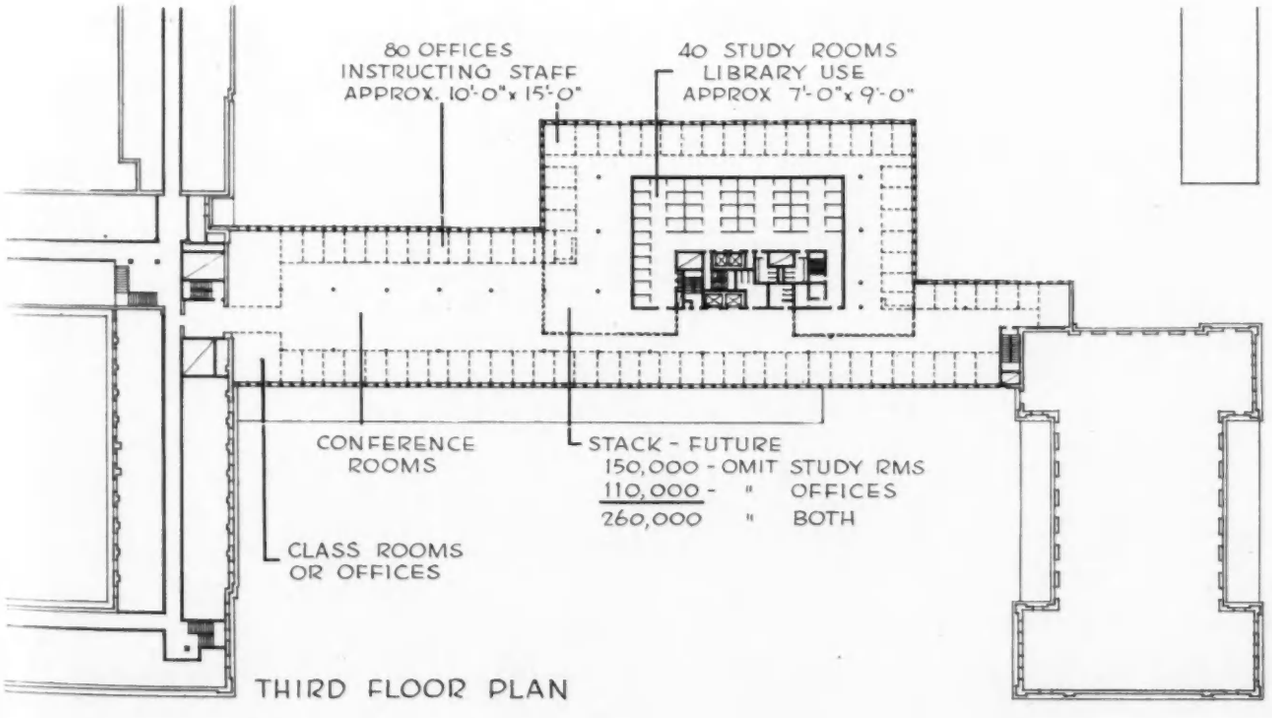
"On the second floor will be found the research library center of the Institute, centrally located, and servicing the present branch library system. Here will be found the services of complete catalogue, bibliography, reference reading room, the main periodical center of scientific current literature, and staff and administration intimately associated to encourage and guide scholarship and its requirements. Both the humanities library and the central research library will be as readily accessible to the outside world as they are to the more closely related life of M.I.T."



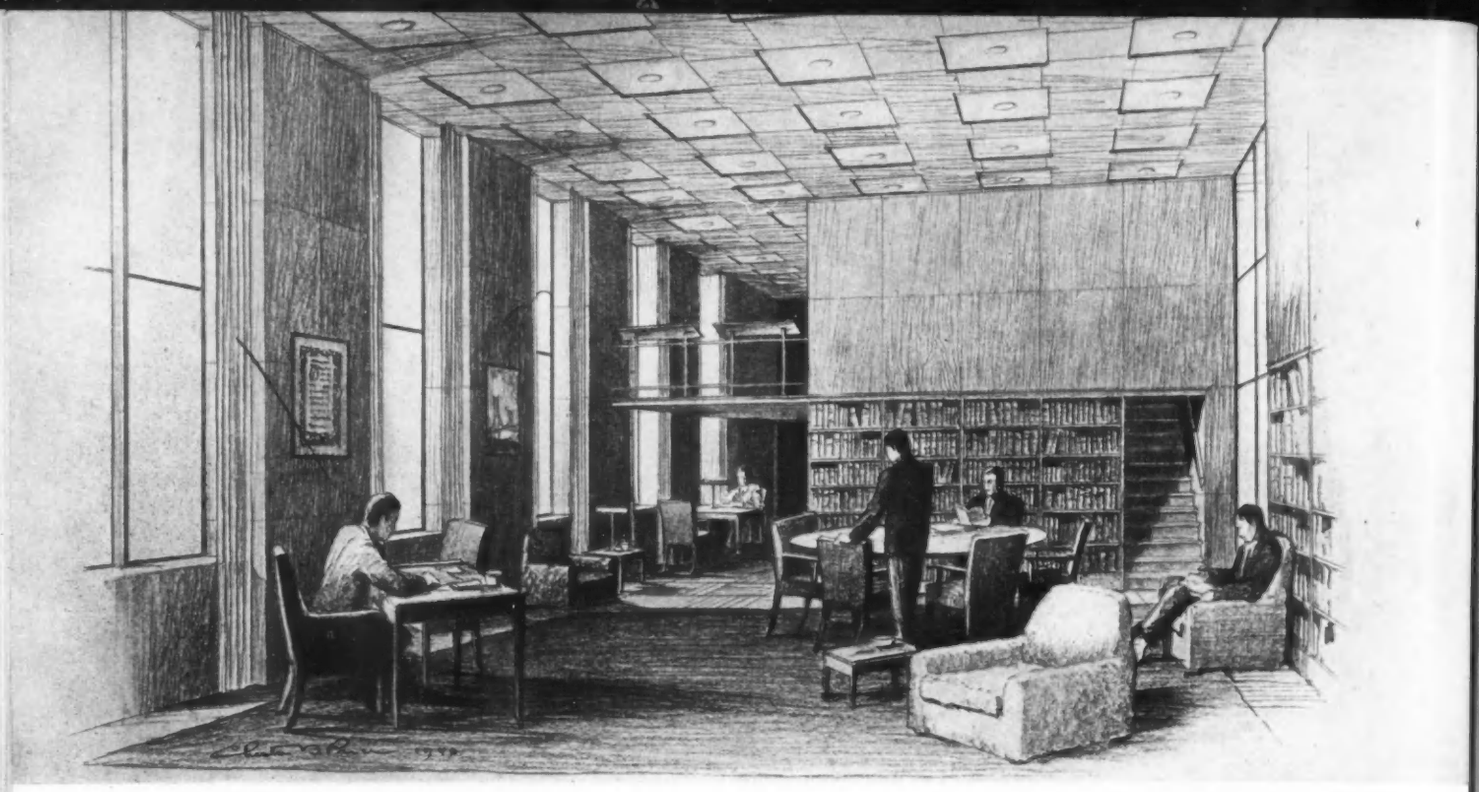
SECOND FLOOR PLAN



The renderings appearing on these two pages portray reading-room views that characterize both the first and the second floor in the Hayden Library. Across-page is seen the side of a room toward the corridor, and directly above the side toward the windows. Although the furniture disposition differs, it will quickly be recognized that the basic dispositions are alike. Indeed, the two interior arrangements which are displayed serve to suggest the great variability intrinsic to a carefully considered modular disposition. The gallery may be included or omitted and stacks introduced as desired

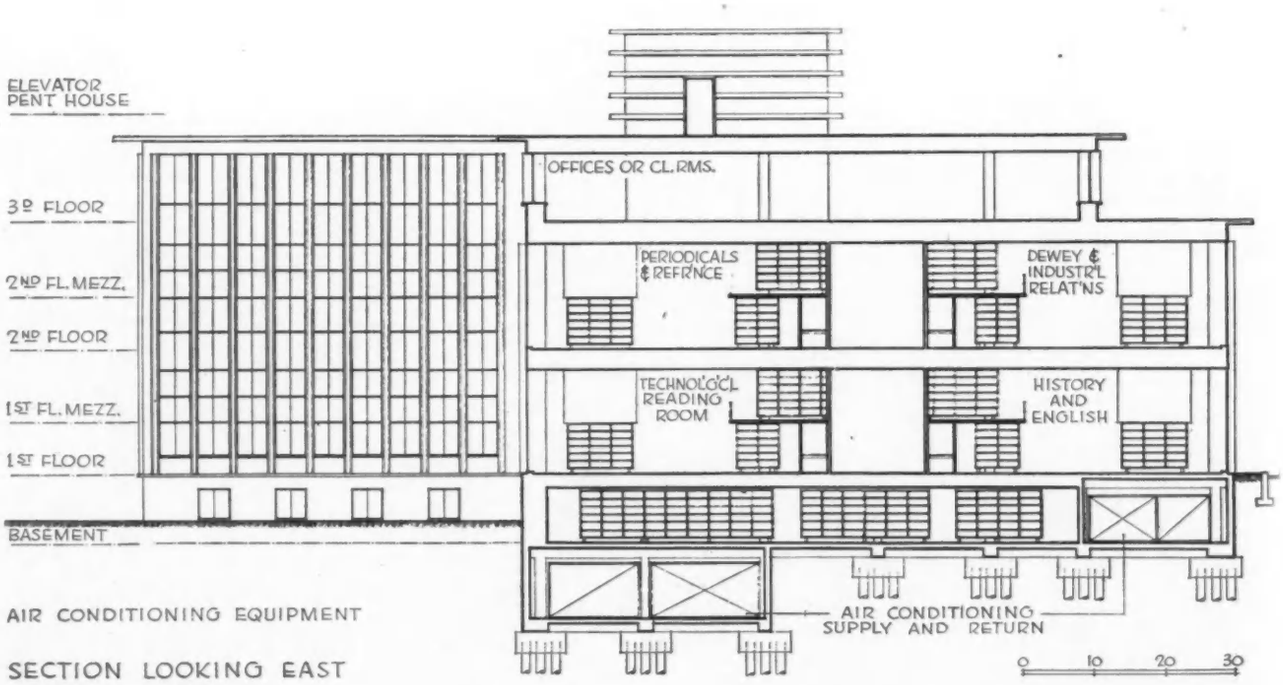


THIRD FLOOR PLAN



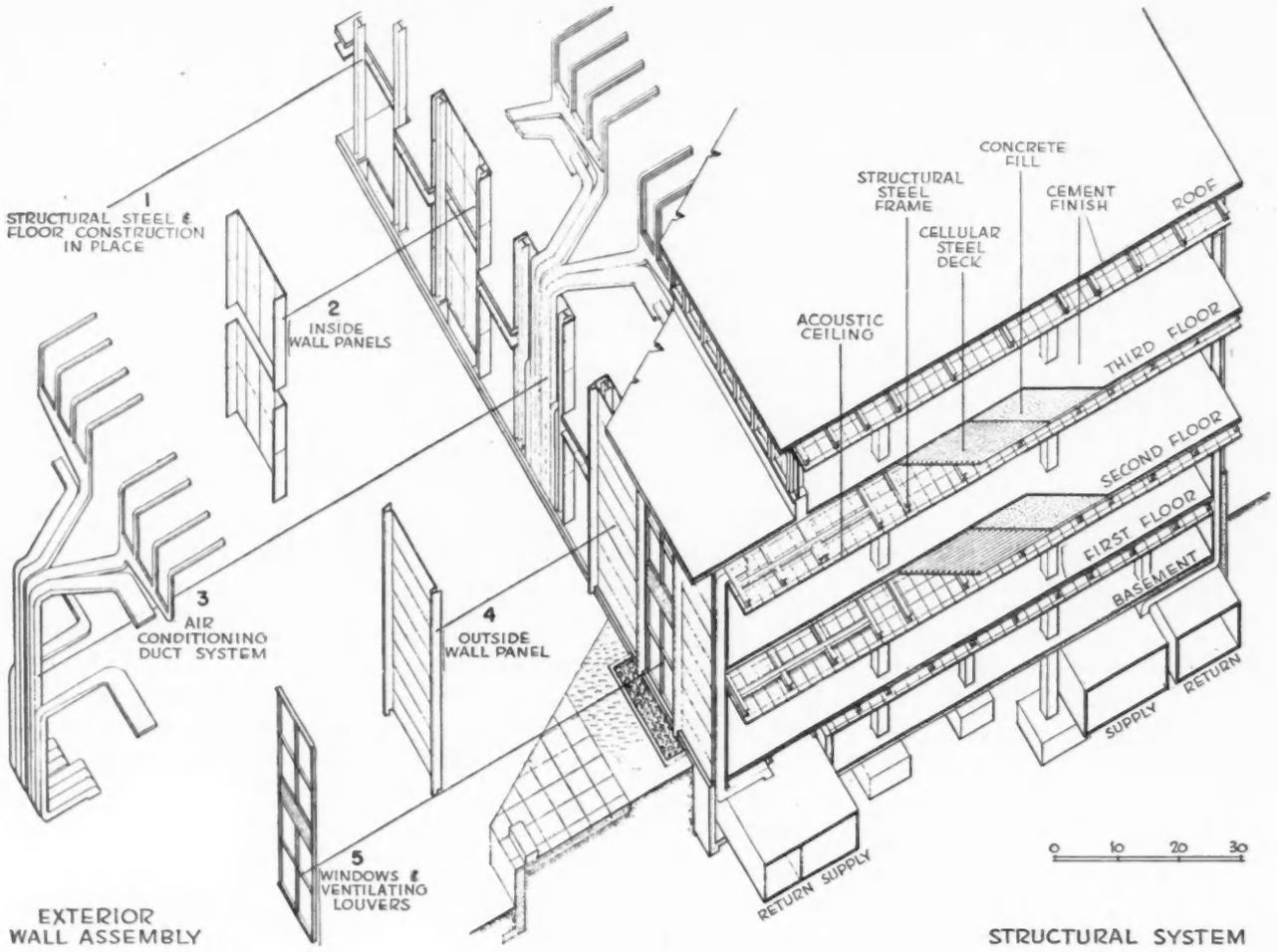
DESIGN CORRELATION

Purposely there are exhibited together, on these two pages, the rendering of a choice rare-book room and the basic diagrams of the mechanical system. The calm and serene atmosphere of the finished room must depend, in actual use, to a large degree on the efficient functioning of the mechanical services. Yet these in turn derive their specific design from the architectural dispositions — in particular the floor-to-ceiling alternation of glass panels with solid wall panels in the outer wall. The wall panels, forming the deep embrasures, yield space for the ducts. The location of the rare-book room is shown on the second-floor plan, page 103. The isometric drawing (across page) of the structural system and exterior wall assembly is explained further on page 108



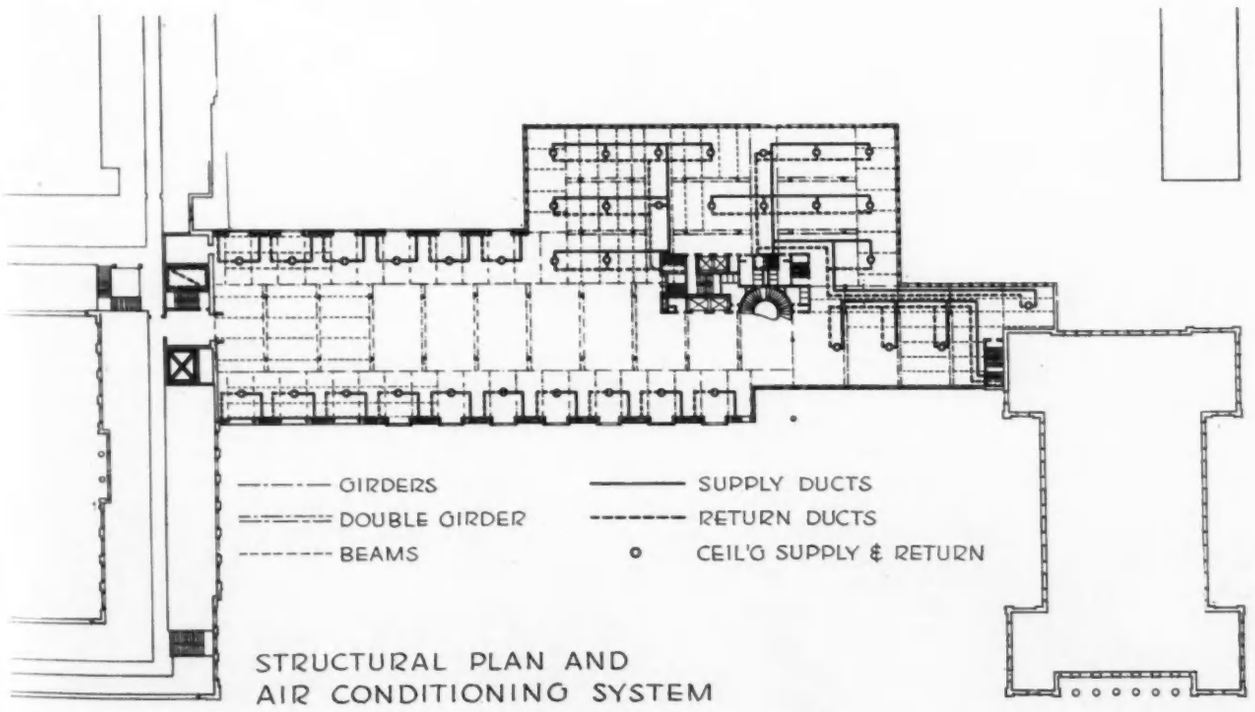
AIR CONDITIONING EQUIPMENT

SECTION LOOKING EAST

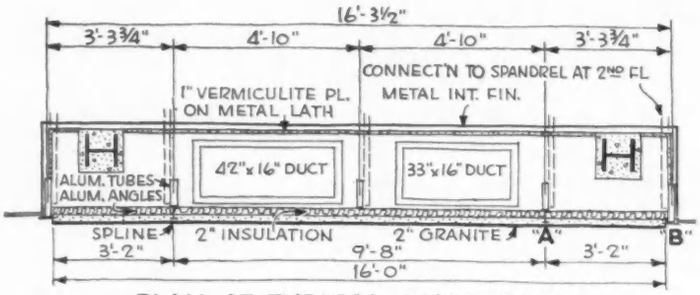


EXTERIOR WALL ASSEMBLY

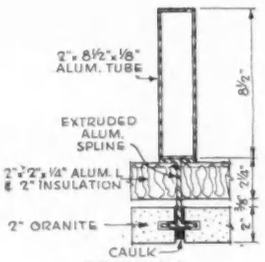
STRUCTURAL SYSTEM



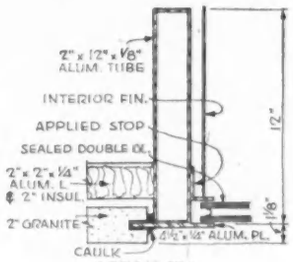
STRUCTURAL PLAN AND AIR CONDITIONING SYSTEM



PLAN AT TYPICAL WALL PANEL



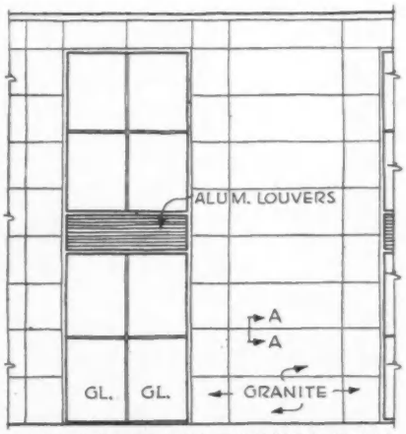
DETAIL "A"



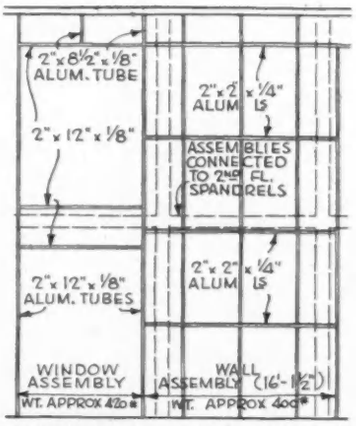
DETAIL "B"

OUTER WALL STUDY IN RED GRANITE

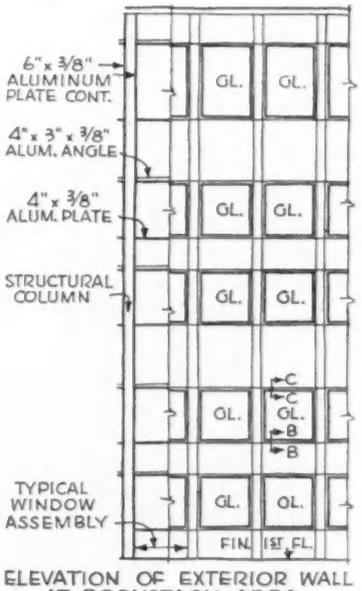
The details indicated on this page represent the architects' latest study for the exterior wall. Polished red granite is the material that has been used in later studies. As may be seen in the part-elevation appearing immediately below, this material will produce some change in the external appearance of the Hayden Library as compared with the renderings — in the direction of a fine elegance. The window surrounds are reduced to the extreme simplicity of a sharp arris, played off against the line of the thin metal frames. It would be difficult, in any treatment in metal in large sheets, to obtain just this quality of utter smoothness



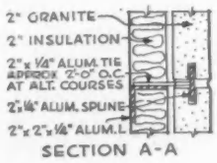
ELEVATION OF FIN. EXTERIOR WALL READING ROOM AREA



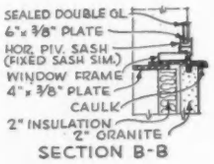
ELEVATION OF ALUM. FRAMEWORK READING ROOM AREA



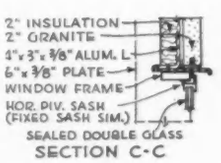
ELEVATION OF EXTERIOR WALL AT BOOKSTACK AREA



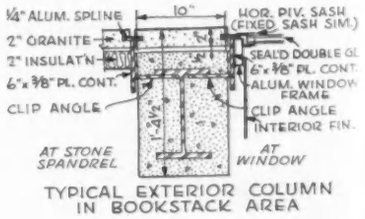
SECTION A-A



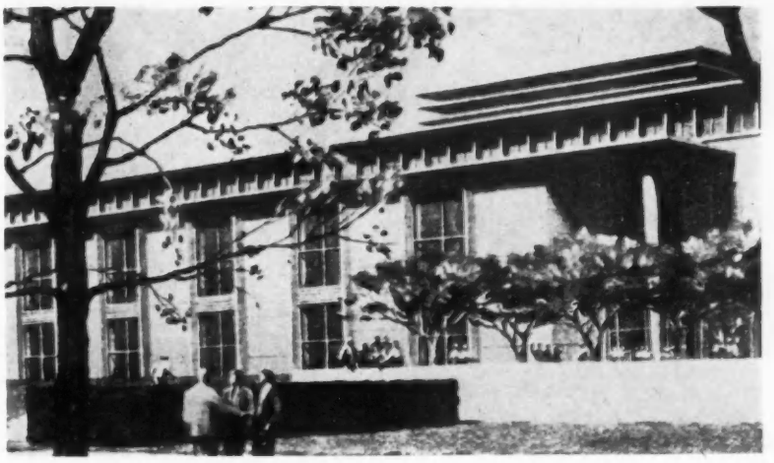
SECTION B-B



SECTION C-C

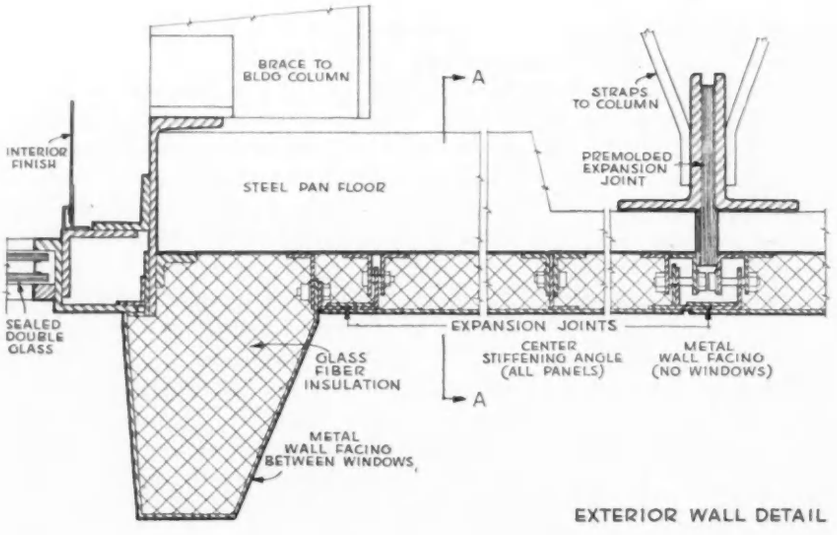


TYPICAL EXTERIOR COLUMN IN BOOKSTACK AREA

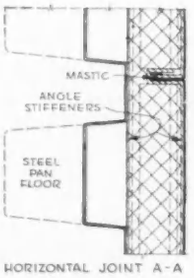


OUTER WALL STUDY IN ALUMINUM FACING

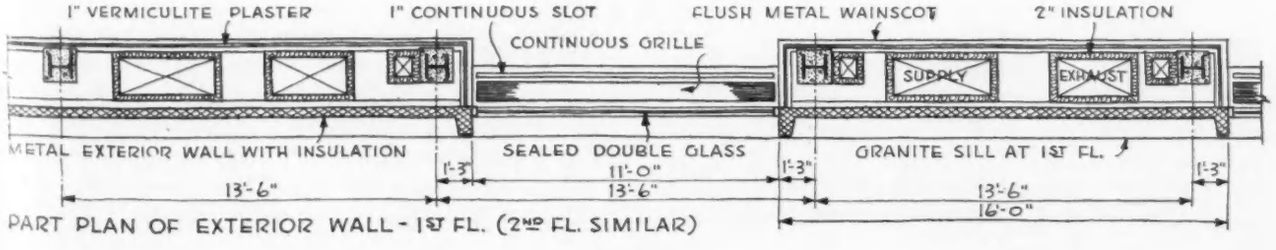
Although the idea of a metal facing for the Hayden Library may not be chosen, the earlier study seen on this page is still full of interest. The detail shown below was the basis for the rendering shown above. The expectation was that the metal wall-covering might be obtained in huge panels, all factory-made. In the study shown, stiffening was to be obtained by a backing of steel-pan floor shapes placed with the corrugations running laterally (sketch of horizontal joint, "A-A"). To these would be attached the vertical channels serving to hold the aluminum sheets and to provide a space for insulation material.



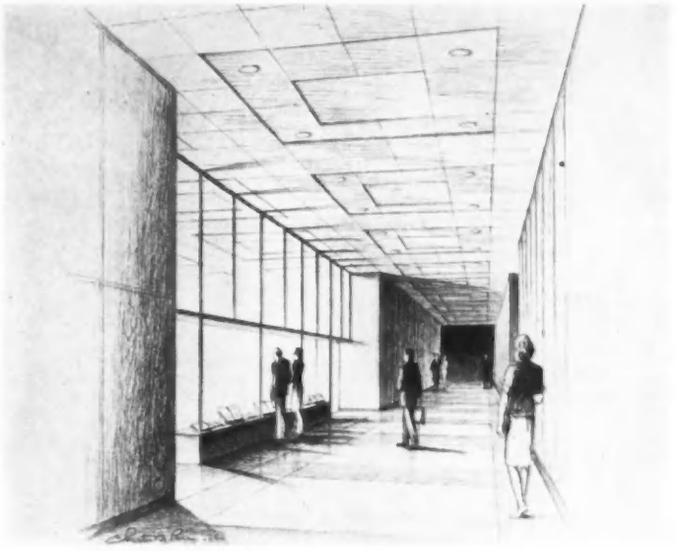
EXTERIOR WALL DETAIL



HORIZONTAL JOINT A-A



PART PLAN OF EXTERIOR WALL - 1ST FL. (2ND FL. SIMILAR)



Entrance to a reading room, treated as an inviting display along a corridor which serves as an "avenue of culture" — the librarian's term for it. "Let us hope," he says, "that the intellectual attraction will be no less apparent than the architectural one"

CONTROLLED CONDITIONS—AND THE HUMAN ELEMENT

Although the architects' detailed plans for lighting cannot yet be presented in as full detail as the method of air conditioning (see Architectural Engineering Section, page 117) the basic approach is in keeping with the general attitude manifest throughout.

Lighting is being considered not as a problem in itself but as a component part of what may be described as the total *setting* found by the library's guest. Measurements in footcandles and reflection values take an important but a subordinate place. Artificial illumination, with its steady and unaltering characteristics, is not accepted as the panacea of the lighting engineer. Rather, its great resources are employed to arrive at the best total combination with the best in daylight.

The argument of the engineers is that daylight, with its variations, introduces an incalculable, and therefore less than perfect, element. The attitude of the architects is that people love daylight; that there are differences of individual preference; that some people like changing moods; that if pleasure in work depends on sentiment, then sentiment enters the data no less than "performance standards" expressed in statistical terms whose validity may be less than ultimate.

Specifically, the alternation between vertical wall and vertical glass panels is accepted as giving the reader a personal choice. Not enough is yet known about the eye to be sure that all eyes are alike. Let those who prefer to sit in full sun brightness choose that kind of a seat; let those who prefer more shade have what they wish. Later an ophthalmologist may find that there was a valid reason, in both instances.

What artificial light can do during daytime is to smooth out those extremes which are *known* to be deleterious. Thus, it is contended, for example, by those who favor uninterrupted glass walls, that there is a vicious effect in the sharp alternation between light windows and dark outer wall, which results in so-called glare. Yet there may be more than one way in which to skin the cat. By punching a high level of well diffused artificial light into the room as a whole, the fixtures supplied by the modern industrialist permit us to have our "sentimental" daylight and *still* not suffer the glare. And along with daylight we keep the distant view.

Such, at any rate, is the architects' considered opinion. It falls into a controversial realm but at the very least, from those of different persuasion, it must command respect.

In its own way, this approach underlines the quality that is manifested in the designs for the Hayden Memorial Library taken as a whole. They represent technical competence shot through with humanism; scientific means used not as an end in themselves but as an enrichment of human experience. It is perhaps not unfitting that a library which seeks to complement the most accurate and searching scientific research with the broad disciplines of humanistic knowledge should have been designed by a firm of architects *and* engineers, or, if you prefer, engineers *and* architects.

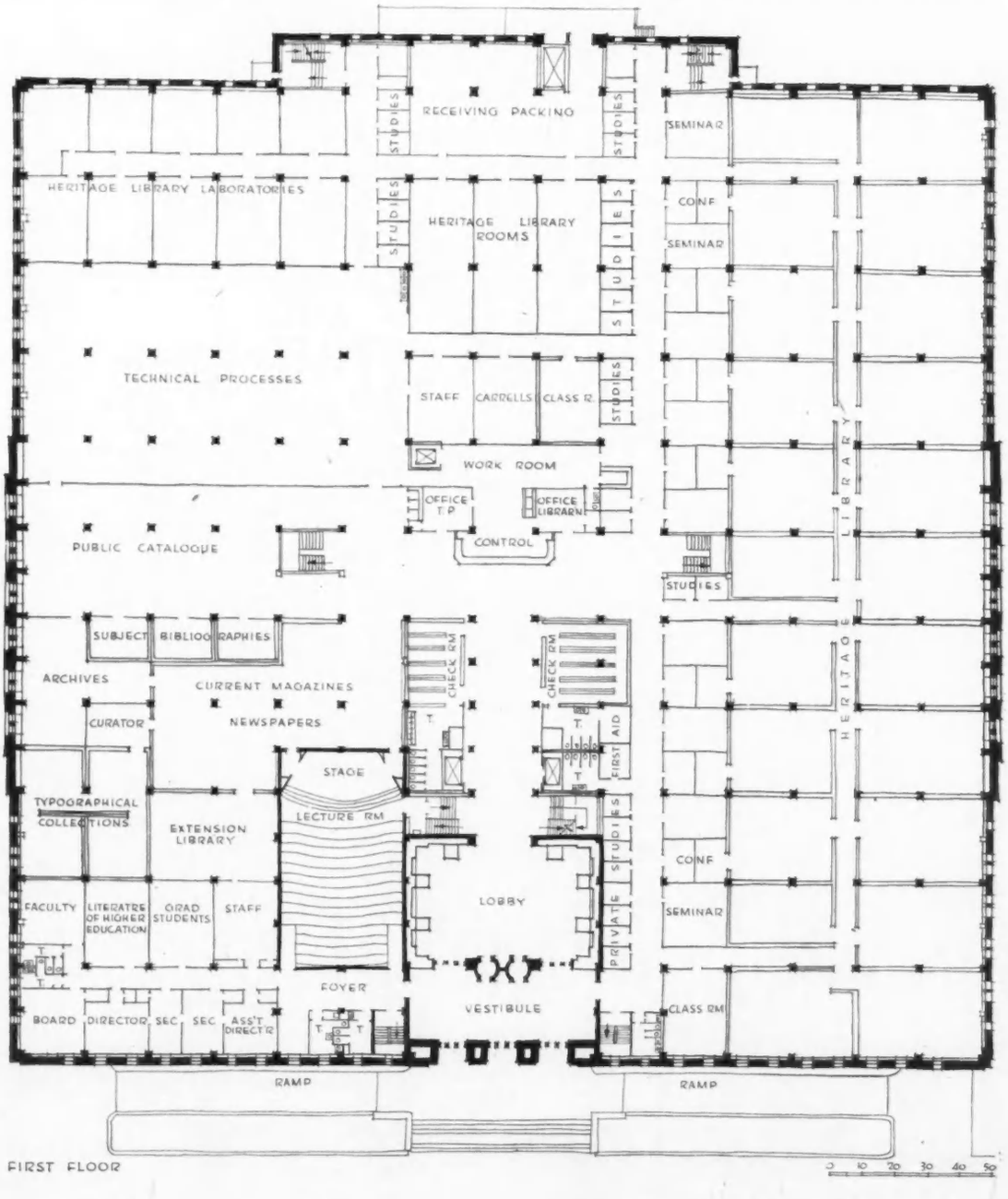
THE "MODULAR" LIBRARY

Keffer and Jones, Architects and Engineers

RATHER than a great architectural monument, the building will be a sensible workshop in which instructor and student can work together." This is the clear cut objective of the Library Planning Committee and architects of the proposed library at State University of Iowa. The "Iowa Plan" bases its layout and construction on a single "module" size, between uniformly spaced columns and uniform ceiling height, that will best accommodate the full range of typical library functions. Columns throughout the structure will serve as anchors for either movable wall partitions or free-standing bookstacks, both of which are interchangeable; and ducts and electrical raceways will be fed through the columns into each space module in a set pattern.

The result will be a library interior which can be divided into a large number of informal reading centers that can be arranged at will. In this way, "the proposed library will contrast directly with the traditional university library in which each function is given its own specially designed quarters, i.e., stackroom, reference, reserve, periodical and newspaper room, carrells, and offices . . . a balance which is soon destroyed by changing needs."

Aside from combating the threat of obsolescence, the



committee indorses this informal and flexible arrangement of library functions in an effort to bring the advantages of a scientific laboratory to departments outside the sciences. The library is not meant as a mere "storehouse for books," but as a "center where new methods of teaching and new faculty-student relationships may emerge, and where students may gain knowledge from direct and positive participation in research." Ralph E. Ellsworth, Director of Libraries, states, "We think that the best results come about when you create a natural working relationship between the student and the faculty. By that I mean that the sciences have been able to accomplish wonders, not because of their curricula, but because of their scientific method. We are simply trying to provide facilities which will permit the development of similar methods in the social sciences and humanities."

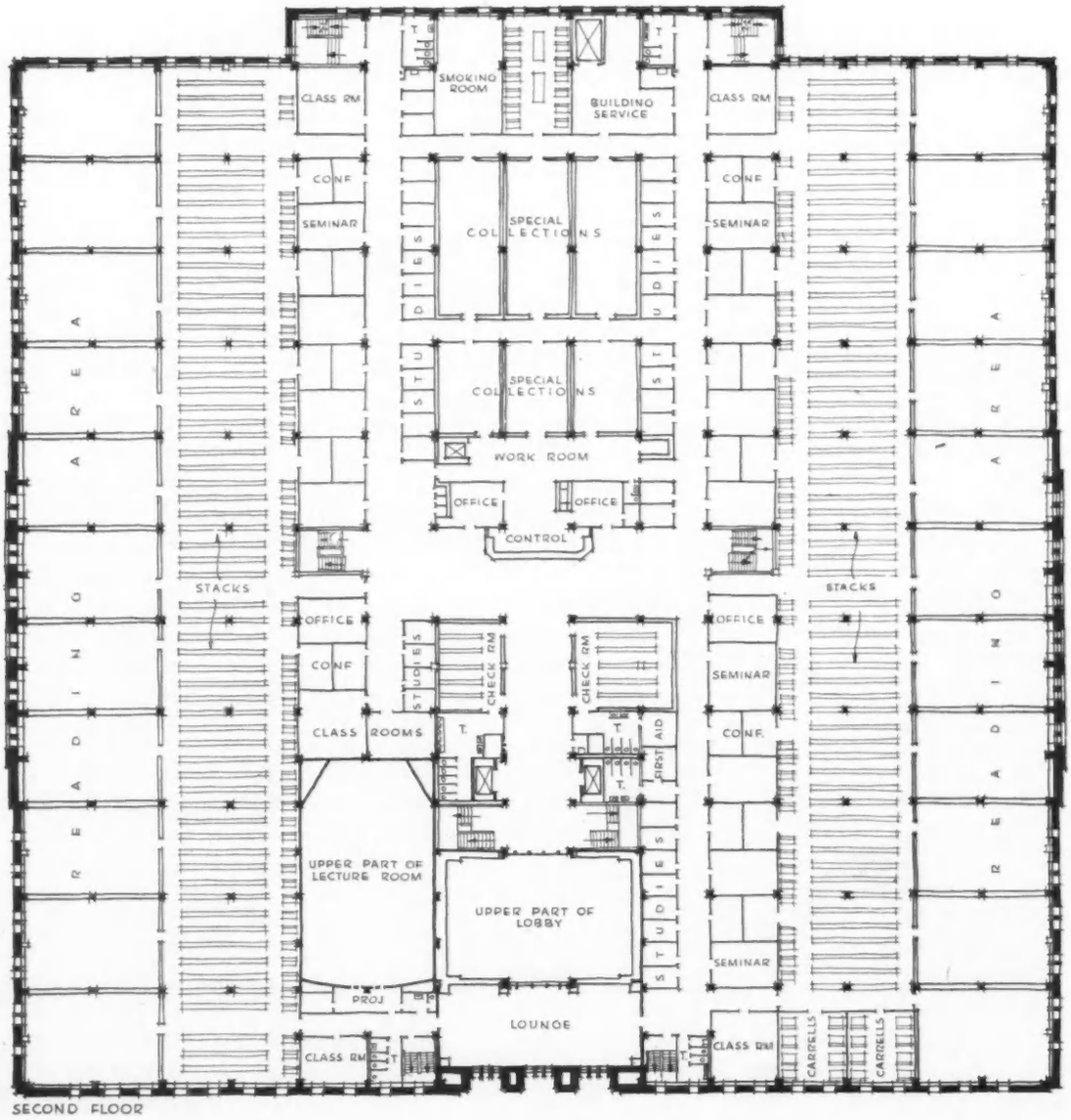
These objectives — flexibility and informality — are achieved through a basic structural and planning unit of remarkable ingenuity. (See detailed discussion on page 115.) As can be seen by the plans, the library is merely an extension of the familiar loft building idea of great open areas broken only by structural supports, spaced at regular intervals.

Library functions will, in general, fall within two main groups: those of the "Heritage" or "General Education" library, on the first floor, and those within "areas of concentration and research" on the floors above.

The "Heritage" library will be arranged chronologically around the historical periods that have most affected man's thinking, with each period divided into categories.

Thus it will become a skeletal outline of human achievement composed of models, maps, pictures, books, posters, phonograph records, slides, objects, and motion pictures. A lecture hall is provided for motion pictures, and is suitable also for lectures, group conferences, and forum discussions.

Also included in the "Heritage" library will be required reading for the basic group of courses in the Arts College. Therefore, most students will make considerable use of it as part of their required reading program.



SECOND FLOOR

Areas of concentration and research are grouped, for the most part, on the upper floors, and provide facilities for advanced instruction and research. There the different university departments will each have its own nucleus of study areas. Interdepartmental programs are constantly in the process of formation and dissolution, and the physical structure of the library offers particular advantages for this reason.

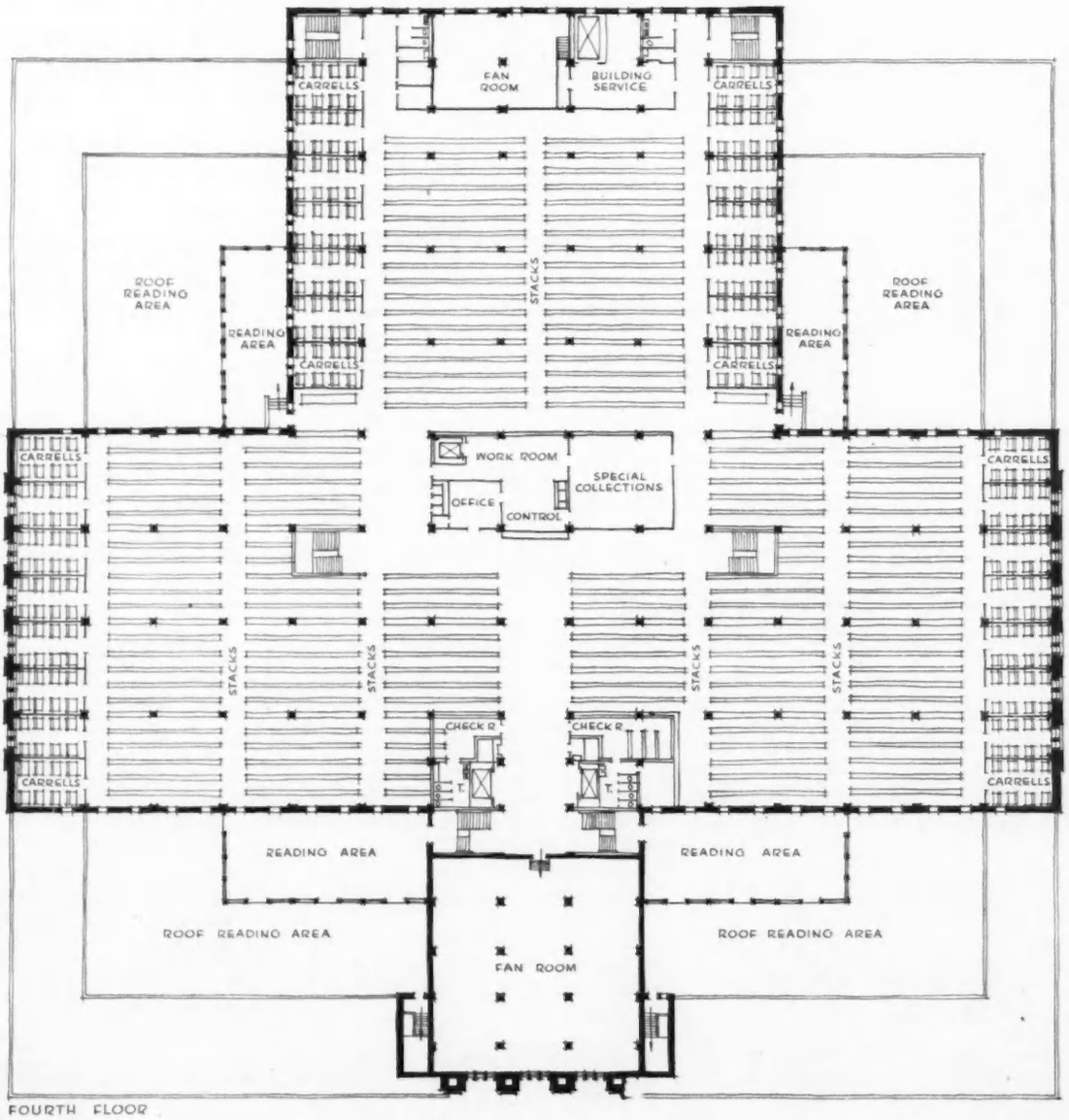
Each individual subject center is planned to contain all types of library materials concerned — reference, reserve, pamphlets, and bibliography, with each collection divided into two groups, for storage and for teaching. The teaching collection will be contained on shelves forming the walls of the reading areas. Storage collections will be placed between the reading areas and the carrells in which individual researchers will work. This arrangement keeps the collection of material for each subject small enough to be comprehended by the student, and yet close to the storage collection with full facilities for the researcher.

Each subject center will have its faculty offices, consultation rooms, seminars, and space for use of audio-visual aids. Changes in space allocation can be made to meet the current needs of each center, since all partitions and bookstacks are movable and interchangeable.

Seminar rooms will be used for tutorial or seminar classes smaller than 25 in number. All strictly lecture classes will be held in other university buildings, but small classes that use library materials freely will be housed in these seminar rooms.

The third floor, which is not shown in plan, resembles the second floor in its facilities. Main difference is in the location of bookstack storage areas which are grouped in the rear of the building, while reading rooms are brought to the front. The space over the lecture room and lobby is devoted to reading rooms and studies.

The main questions left open by the plan are whether floor areas so large, with subdivisions so complex, can quickly be explained to successive generations of newcomers, whether they can efficiently thread the maze, and whether they will feel at home.



FOURTH FLOOR

BIBLIOGRAPHY ON UNIVERSITY LIBRARIES

ARCHITECTURAL PERIODICALS

Libraries. American Architecture: 1891–1941. Part II. ARCHITECTURAL RECORD: Feb., 1941, pp. 84–87.

The Houghton Library of Rare Books. Perry, Shaw and Hepburn, Architects. ARCHITECTURAL RECORD, July, 1943, pp. 42–47.

Microfilm Library. Richard M. Bennett, Architect. ARCHITECTURAL FORUM, Oct., 1940, p. 305.

Additions to Wheaton College. Hornbostel & Bennett, Architects. ARCHITECTURAL FORUM, Jan., 1943, pp. 81–83.

Library for Carroll College. Ides Van Der Gracht and Walter H. Kilham, Jr., Architects. ARCHITECTURAL FORUM, April, 1943, pp. 66–70.

Skidmore College Library. Louis E. Jallade, Architect. PENCIL POINTS, July, 1941, pp. 457–60.

Yale Medical Library. Grosvenor Atterbury, John A. Tompkins and Frank Dvorak, Associated, Architects. PENCIL POINTS, Jan., 1942, pp. 31–36.

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LIBRARY CONSTRUCTION FOR INTERCHANGEABLE USES

FROM the example of outstanding libraries on the boards today, first step in library planning is to adapt the structure to a modular division and redivision of space. This means selecting a bay as a cubic module between columns and floors, which can be grouped conveniently into bookstack areas and reading rooms, or subdivided into seminar rooms, conference rooms, and carrells. Architects will readily trace this trend back to the loft type of building which offers maximum flexibility in arrangement and rearrangement of rooms and work space over large areas.

Such a cubic module might for example be a bay 18 ft. by 27 ft. between columns, and about 8 ft. 6 in. high. Length and width are close to multiples of 3 ft. to accommodate 3-ft. bookstacks and movable partitions, and vertical dimension is related to their height. As a result, bookstacks can be placed where needed, and stock partitions moved when rooms are relocated. Even portions of decks can be removed if dry construction with movable floor panels is used, in order to raise the ceiling height in newly created large areas.

The question is no longer *whether* to introduce modular design but *how?* Should provision for internal flexibility be made over the entire floor area on every floor, or are there some areas, such as the main bulk of the bookstacks, that can confidently be expected to stay put? This question is not one of structure alone, but one of structure in relation to services and equipment: services such as air conditioning; equipment such as elevators, stairs, and plumbing.

The new modular approach differs from that of just yesterday in relation to the bookstacks. Architects are familiar with bookstacks whose supports can serve as an integral part of the building skeleton up to a height of 12 tiers (6 stories). Such a structure is permanent, however. The newer idea seems to be to use free-standing bookstacks that can be moved to new locations.

Critics of modular-space library planning point out that the idea of making practically an entire library interior immediately convertible from one type of subdivision to another presents difficulties, chiefly in repeating air conditioning ducts in an absolutely standard pattern throughout the building. There is a chance, certainly, that initial installations may be overdone when one tries to provide in advance for every possible space arrangement. It may be cheaper to break into ceilings here and there later, rather than to provide outlets in every subdivision from the start.

THE IOWA APPROACH

"Don't build for one purpose only if it can be designed just as efficiently to serve two or more purposes.

"Don't build it in, if it can be made movable and still serve the purpose for which it is intended."

These principles guided the design and structural scheme of the proposed library at the State University of Iowa at Iowa City (see page 111).

Since there is a very definite working relationship between the different library units, such as bookstacks, reading areas, classrooms, seminars, conference rooms, and private studies, a modular division of space between columns was sought, one that would best fit their varying dimensions, and give a free and fluid arrangement that could be varied to fit changing needs. After considering modules of 13 ft. 6 in. by 19 ft. 6 in. (most convenient) and one of 22 ft. by 22 ft. (structurally most economical), it was decided to make the module 19 ft. 6 in. by 27 ft. on column centers.

In selecting the vertical dimension, the problem was one of finding the lowest ceiling height that would be satisfactory for reading areas, and still not waste too much space above standard stack height of approximately 7 ft. in areas to be used for book storage. It was decided that 8 ft. 2 in. would be safe as the universal height, as long as no reading room was larger than 4 modules. At present 2 modules is the largest area contemplated. With good lighting and ventilation, and proper use of color it is believed that the library will still have a nice feeling, even with low ceiling height.

This typical module, 19 ft. 6 in. by 27 ft. by 8 ft. 2 in., makes possible:

a. Stackroom (multiples of 1 module).

b. Reading room for 30 to 35 students (1½ to 2 modules), which can be expanded by any number of modules to form a large reading room.

c. Classroom for 30 students (1 module), formed by movable partitions.

d. Seminar room for 20 students (½ module).

e. Conference room for 3 or more students (¼ module).

f. Private study, or carrell (⅛ module). At Iowa, these carrells are free-standing pieces of furniture located wherever desired.

Each typical module is structurally self-supporting, allowing walls and floors alike to be removed without affecting adjacent modules. Exterior walls are not load bearing.

Entrance vestibule, lobby, and adjacent toilets, elevators, and the lecture room form a permanent service core; with additional columns introduced to carry the load. Stairs and plumbing fixtures outside this permanent area are movable. Due to the fact that the building will be located on the banks of a river, requiring the use of some 1500 concrete piles, only sufficient basement area is provided to accommodate necessary service terminals and machine rooms. It is not intended for use as book storage.

Structural provisions for air conditioning: Air is introduced from the fan room on the top floor down the hollow columns to laterals bracketed between the twin beams which carry the floor in each separate module. Openings in these laterals are punched on the neutral axis to emit air into the ceiling space over one bay or module. It is distributed to the room through perforated ceiling pans. These metal ceiling units are all removable and may be interchanged with non-perforated units so as to lend control over amount and location of entering air. Exhaust air is taken through perforated column bases to an auxiliary fan room which is located in the basement.

Lighting: Wiring conduits are carried in the columns, and connect with troffered ceiling lights built into ceiling panels, which are interchangeable with the plain perforated ceiling panels, to provide proper lighting for ⅛, ¼, ½, or a full module. Light intensity required in each area for varying uses will be obtained by using one, two, or three fluorescent tubes in the fixtures, as required. Changing the circuits and switch controls will be accomplished by installing factory-assembled wireways or headers with multiple plug-in attachments. Electrical distribution will be through dry transformers located in each floor.

THE M.I.T. APPROACH

In the library to be built at M.I.T. (see page 100), the modular system being studied leads to a different structure. Here the plan is based upon the assumption that the main stack area will be more or less permanent, and requires different treatment from the main wing. Two modules are used for the building rather than one as at Iowa: 27 ft. by 27 ft. in the bookstack areas, and 27 ft. by 31 ft. 6 in. in the main area. Room for expansion of bookstacks is provided on the top floor (replacing study rooms and offices) and in the basement.

Floor to floor height, 17 ft. 8 in., is dictated by the floor height of two buildings between which library is to be placed, with corridors opening into each on successive floors. This floor to floor height is obtained without sacrificing ceiling height. Air ducts will pass beneath floor beams, and allowing about 3 ft. for ducts and floor construction, ceiling height will be approximately 14 ft. 8 in. In stack areas, each story will contain two tiers of stacks, 7 ft. 2 in. high with a 4 in. deck between.

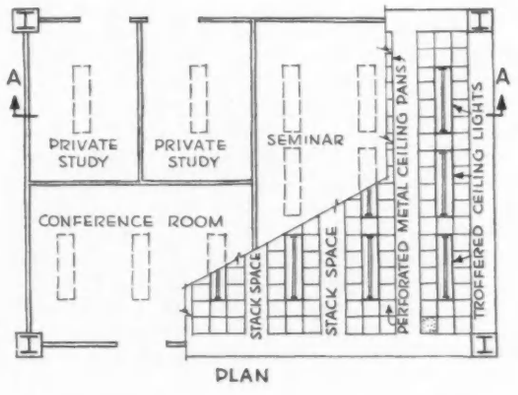
Structural considerations for air conditioning: Air ducts will rise from the basement through the exterior wall between vertical fenestration, fanning out on the several floors to regularly spaced openings along the ceiling (see page 107). This will apply only to the main library area. In stackrooms, air supply will be introduced wherever convenient without ducts in the exterior wall.

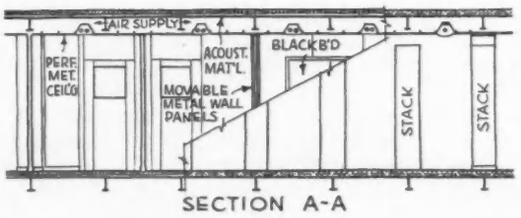
Also indicated on page 107 is an interesting structural framing feature that arises in the outer bays. After air ducts are brought in from the exterior wall, the air conditioning engineer must be able to carry the ducts in any direction without sacrificing room height unduly. To accomplish this, the beams framing the central bays are cantilevered out over the outer bays, shortening the span of the latter so that shallower beams can be used.

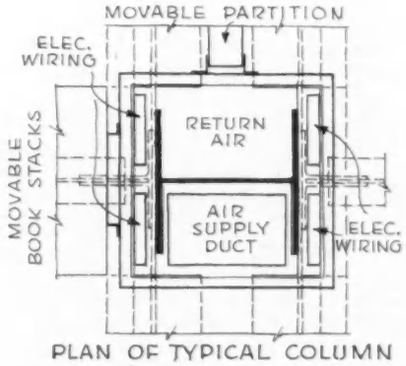
Floor loads are calculated as 225 lb. per sq. ft. live load throughout first and second floors, and 100 lb. per sq. ft. on the third floor. Weight of floor construction, which is still being studied, is calculated as 330 lb. per sq. ft. with concrete floor slabs or 290 lb. per sq. ft. with cellular steel floors.

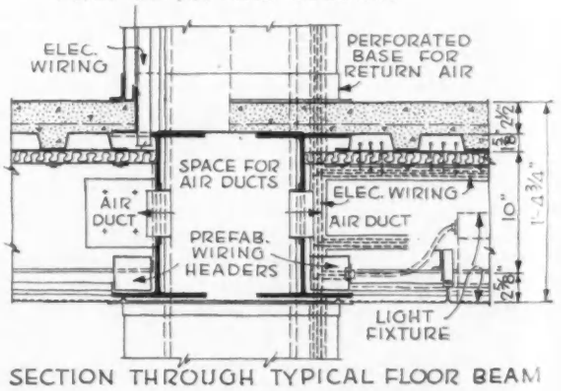
Foundations: Since the library is to be built close to the Charles River, steel piles will be sunk to rock, 130 to 140 ft. below grade. This is to prevent settling, a particularly important factor since the library will open directly into adjacent buildings.

The library under construction at Princeton University will be discussed in a future issue of the RECORD. Mention might be made, however, of one interesting construction feature. Due to the materials shortage, the structural scheme was changed from steel to concrete, and a problem encountered in keeping the size of concrete supports to a minimum in order to conserve floor space. This is being accomplished by twin concrete columns, steel encased, with ducts running up between.









Left: Typical "space module" at library to be built at State University of Iowa (Keffer and Jones, Architects & Engineers) is 19 ft. 6 in. by 27 ft. between column centers and 8 ft. 2 in. high. Plan and section views show how this cubic module can be subdivided by movable partitions into private studies, conference room, and seminar room, or used in its entirety as a bookstack area. Right: Column, 1 ft. 6 in. square, carries ducts for air conditioning and electrical conduits, introduced into each eighth module through floor laterals

AIR CONDITIONING FOR BOOKS AND PEOPLE

By Harold L. Alt, Heating Engineer

IT IS fortunate for the air conditioning engineer that books and people have about the same requirements. It is fortunate, again, that air supply is best made even throughout the building — there is nowhere a sufficient concentration of people materially to affect the load. This permits easy changes for changed use. Still another fortunate factor relates to mold on books: at the Library of Congress, after many tests, a troublesome condition was effectively eliminated simply by packing in the books less tightly — all that was needed to stop mold was circulation of air.

The design requirements of the air conditioning system for the Massachusetts Institute of Technology are perhaps not untypical. The proposed Hayden Library consists of a basement, first, second and third floor, with the possibility of intermediate galleries. There is to be a maintained temperature in winter of 70°F, and a relative humidity of 50 per cent; in summer the maximum temperature is to be 85°F, with the same relative humidity of 50 per cent. Windows are to be commercially manufactured double plate glass with a hermetically sealed air space between, creating a controlled system of air circulation within the building. In summer, air is to enter at a temperature 15°F below the room level; in winter, at 70°F, or room temperature.

Air is to be both filtered and passed through an electrostatic industrial dust precipitator. Seventy-five per cent of the air is to be recirculated.

The total capacity of the system is to be 275,000 cu. ft. of air per minute. Refrigeration is to be by two 350-ton centrifugal refrigerating machines, motor operated, using Freon as refrigerant. Condenser water is to be circulated through cooling towers on the roof, which may be discerned in the preliminary elevations.

In general, all air is to enter rooms through ceiling units of the anemostat type, with the exception of the air which comes in through the slots under the large windows.

In the rear wing, which contains the stacks and study carrells, there are to be convectors under the window sills to compensate for heat lost through the outside walls.

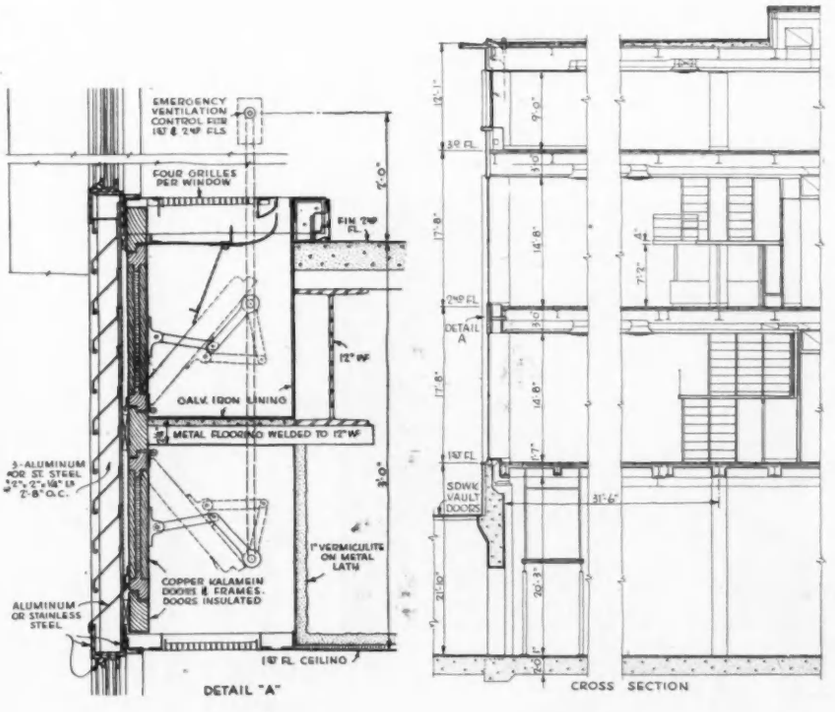
In the main portion of the building, the heating and air conditioning system have to be accommodated to the immense windows reaching to the floor. Here ventilation is introduced through slots in the sill after the air has passed through a booster heater that offsets the wall and glass losses.

In case of failure of the central air conditioning system, there are introduced louvers in the outer wall, in the spandrel space between the head of one set of windows and the sill of the next above (see sketch). These will act as emergency ventilators until service can be restored.

In libraries now under construction the air conditioning system has to be designed around the architectural conception. In the case of M.I.T., the architects desired to save all possible floor space for unobstructed use, but their treatment of fenestration left wide wall areas between the large windows previously mentioned, and these were available for carrying up ducts. Accordingly, in the main wing, air supply and return both find place in the exterior walls. Laterals do not have to be carried into the innermost bays but in case of need, additional loops can easily be introduced. (See plan, page 107.) In the bookstack section it has been more convenient to carry up the ducts at intervals within the interior of the building. This main bookstack area is expected to be permanent.

It would be rash to discuss the relative merit of placing the ducts in the outside wall, as we plan to do, or having them come up at intervals throughout the entire building, or having them incorporated on a modular system with every column, without taking into account the attendant circumstances and the architectural program as a whole. We did make comparative studies for M.I.T. of all three devices and decided on the reported solution as the one that would save maximum floor space in our project.

In working out their preliminary plans, some architects do not realize a peculiarity of duct economics which gives the architect considerable freedom. A large number of small ducts might theoretically seem much more expensive to install than a small number of large ducts. It is easy to compute that 4 sq. ft. of air brought up in ducts 1 ft. sq. require 16 times as much metal area as if they were brought up in a single duct 4 ft. sq. Yet contractors bid on duct work by *weight* only, and the heavier metal may just about make up the difference. Friction is a factor too minor to consider except in cases where faulty engineering causes ducts to be badly underdimensioned.



AIR CONDITIONING TO FIT FULL-HEIGHT OPENINGS AND STANDARD CEILING HEIGHTS. Emergency air intake (left) fits spandrel space seen in the section, right. Uniform ceiling height (to make stacks economical) can be maintained with 3-ft. allowance for floor structure plus duct space. Ducts use a total depth of approximately 18 in.

WHAT ABOUT MICROFILM "AND SUCH"?

AMERICAN research libraries have in general been doubling their book content every 16 years.* Between 1938 and the year of its founding, the Yale University Library amassed, at this rate, some 2,700,000 volumes. Assuming the rate to persist over the next 100 years, and recorded knowledge to remain for the most part in conventional forms of book, pamphlet and periodical, Yale by 2046 would have the approximate equivalent of 200,000,000 volumes extending over 6,000 miles of shelf space, with a card catalog section requiring eight acres of floor area and a cataloging staff of 6,000 persons! The implications are frightening — for architects, as well as for scholars and librarians.

Within 100 years, the "Memex" envisioned by Dr. Vannevar Bush may well be a standard reality. Microphotography in that era may be so improved as to permit, as he suggests, the storing in a unit the size of an office desk the knowledge now presented in a million books. Inventions and progress of the dimensions of "Memex" may, by the year 2046, have reduced library planning to an incidental problem on the boards of modular furniture designers.

Fantastic conjecture possibly but, as a matter of fact, the general adoption of a scheme advocated by Fremont Rider on the basis of microphotography *now* would necessitate architects clearing their boards of all current plans and starting practically from scratch!

Mr. Rider, Librarian at Wesleyan University, has already by microprint reduced the dimensions of a 250 page book to the size of a standard library catalog card. The general adoption and extension of his technique, together with his proposals for more efficient usage of the front of catalog cards for the classification, indexing and abstracting of microprinted contents on the back, would effect extraordinary savings in library procedure and space requirements. Book and card pertaining to it would for purposes of storage and access be one and the same. Catalog sections would be storage stacks as well! No longer must the scholar search out a reference, copy down title, author's name and catalog symbols on a call slip, and wait for the desired book or periodical to be brought to him from a remote shelf. He finds his reference, turns the card over and inserts it in a reading machine nearby, or else takes it home or to his study in the manner of an ordinary book.

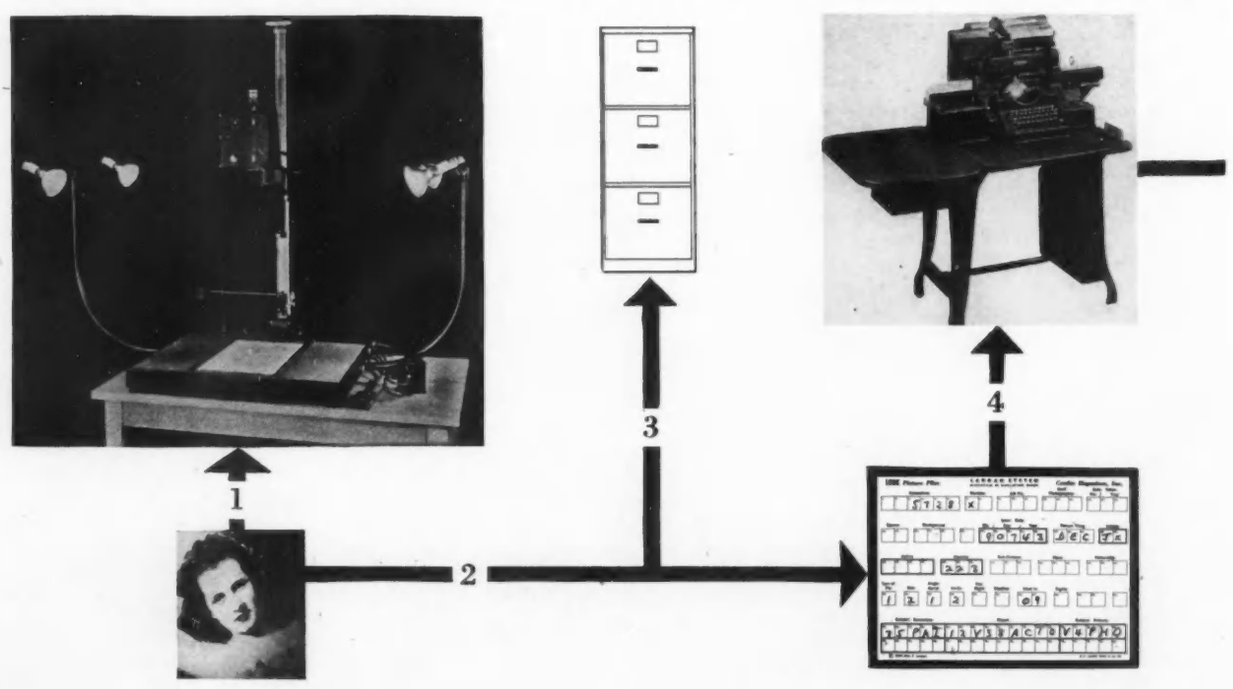
Mr. Rider also demonstrates that his system would permit great savings over present procedures in acquisition, binding, cataloging and maintenance of library reference material which, in conventional format, is already prodigious and threatens soon to outrun human handling capacity.

Microfilm Use at Present

Preoccupation of the moment appears to be largely with microfilm strips rather than the flat cards advocated by Mr. Rider. Microfilm equipment is being used by college libraries largely to reproduce newspapers which are bulky and come to pieces easily. Another use is in the reproduction of rare books to insure their preservation and make them available for wider usage. Some of the larger university libraries have their own printers; others depend on the

* "The Scholar and the Future of the Research Library," by Fremont Rider, Hadham Press, New York City, 1944.

Below: The Langan system for rapid location of photographs in the files of Look Magazine. *(1) original photograph is shot by Recordak printer, accession number on original being reproduced on microfilm. (2) such information about photograph as primary and secondary subject, country, type of action, weather, etc. is encoded on a special slip. Original photo is filed according to accession number (3). Encoded slips go to specially adapted IBM punching machine (4) for translation of coded information onto punched cards (5)*



newspapers themselves for microfilm editions and on such regular microfilm sources as the Library of Congress, National Archives and University Microfilms, Inc. at Ann Arbor, Michigan. Present methods reproduce 800 newspaper pages to one roll of 35 mm. film. Book reproduction is done on 16 mm., averaging 500 pages to the roll.

Microfilm reading machines, the Eastman Recordak, for example, are available at about $100 apiece, confining present extensive usage to institutions with fairly substantial budgets. The New York Public Library now has seven machines accommodating seven readers; ordinary provisions are made for 60. Each machine requires about 3 by 3 ft. of floor space with additional space required for the operator. Storage of microfilm rolls is in drawers beneath the machine, each drawer containing the equivalent of 450 complete newspapers. Although space economy with microfilm in this form is tremendous, each roll requiring on an average of 2 per cent the storage provision allocated to the original material, proponents of microprint cards claim at least equal potential saving by their methods. In addition they cite the advantage of being able to combine microprinted material with catalog cards and the greater ease of back or forward reference with information on a flat surface rather than in roll form. Equipment for reading flat material, however, is presently at an inferior stage of development.

Machine Methods

Widespread introduction into library procedures of machinery to handle cards by means of punched hole codes has long been advocated, although adoption to date has been fairly casual. The two systems which appear to be most applicable are Powers', in which mechanical fingers reach through the coded holes to set off springs and levers, and Hollerith's, in which the holes act as selective insulators to open or close multiple electric circuits. Hollerith patents are controlled by International Business Machine; Powers by Remington-Rand.

One of the best known and successful examples of machine usage is at the Montclair, N.J., Public Library, where IBM has installed a system as a proving and experimental ground. Borrower's registration, identification and loan cards are in standard IBM form, as well as accession, order and circulation records. By machine methods, the library obtains almost instantaneous information not only about any element of its book stock and orders outstanding, but about readers as well. By means of punch coded information on users' cards, research can be conducted into reader habits and needs with unprecedented ease, accuracy and degree of detail.

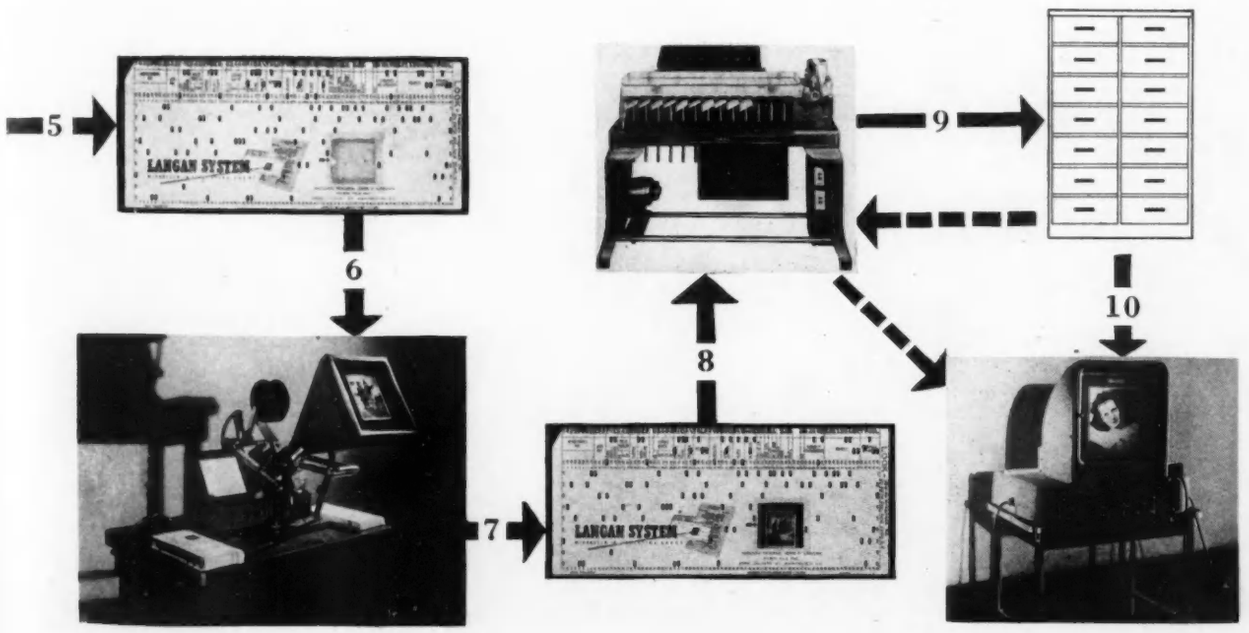
Punched card procedures have also been applied by the Columbia University Library to acquisition routines. The Universities of Florida, Georgia and Texas have installed machine systems for circulation and order records, and others are preparing to follow suit for such purposes. The Library of Congress, as might be expected, has one of the most elaborate installations of any institution for acquisition, circulation and order work, and is experimenting in applying the methods to other phases of library procedure.

Of primary interest is the potential application of punched cards to the problem of connecting the reader with the precise book or reference he wants out of the vast abundance of informative material now available and ever increasing. Some standardized and generally applied improvement over the "wet-thumb" method of searching through catalog cards is an obvious crying necessity.

Another objection to present catalog cards is that they do not permit sufficient multiple indexing and depth in the abstracting of book contents.

John Langan's machine methods for locating a precise photograph among a million possibilities in the *Look Magazine* files suggests a solution to all objections. His system permits the coding of information regarding a photograph under some 26 different headings. The next step would seem obviously to be perforation of the Rider microprint card with coded punch holes representing not only indices but possibly content abstracts as well, and permitting some sort of machine selection similar to the system illustrated below.

Card goes to machine (6) Langan designed for insertion of microfilm square (7). Cards are sorted and arranged (8) according to code symbols. Cards are filed (9) according to symbols. When photograph is desired on a particular subject, seeker removes cards under closest code classification in file, inserts them in viewer (10) which turns them over at controllable rate until precise photograph appears A preliminary step, when stack of cards is large, is use of the IBM selector. Original photo is located by accession number on microfilm



LIGHTING IN LIBRARIES

OPINIONS and recommendations on the subject continue to vary widely, with recent assertions by ophthalmologists * as to the possible harmful effects of flicker and ultra-violet radiation adding fuel to the controversy of filament vs. fluorescent systems.

In general, however, there appears to be improving agreement on basic principles. Discussion of desirable *intensity* is fairly well confined within the range of 10 to 30 footcandles; there is general agreement that *glare*, both direct and reflected, must be avoided as much as possible within the visual angle; *contrast* over large areas should be controlled within the ratio of at most 10 to 1 ("unity" is ideal); and authorities generally agree that the more nearly the *quality* of general illumination approaches daylight, the better it is.

Lighting for Work and Reading Rooms

Open indirect luminaires are receiving much advocacy. Some proponents advocate as close a simulation as possible, within given room conditions, of natural landscape properties — light values of the sky (at approximately ½ hour before sunset) for ceilings and upper walls, foliage and earth values elsewhere, with no brightness contrast (Helios) in excess of 3 to 1 over large areas. Fixtures specially designed to implement this naturalistic scheme are of heavy tinted, slightly translucent glass, reflecting most of the light to ceiling but permitting enough to filter through the fixture to give it a surface brightness corresponding to the ceiling itself when lighted. Other types of fixtures which may be adapted to the scheme are: metal, with concealed openings to spill light on the outside of the bowl; self-reflecting silvered bulbs, shielded by reflecting concave disks or concentric rings of glass or metal; metal or glass troughs with diffusing features similar to the bowls, which may be used with either filament or fluorescent lamps.

Coffer or "Troffer" systems are considered efficient where recesses are correctly designed to prevent glare.

Cove lights are considered excellent where the room is not too wide and where coves are accurately designed for proper diffusion.

Diffusing glass panels: low surface brightness, good diffusion, little glare, but high in current consumption.

Prismatic lens fixtures of the flush or surface type are considered efficient when installed to provide plenty of overlap and arranged to give greatest spread along the length of reading tables. Prismatic lenses are also being used in direct-indirect systems with success in properly engineered applications.

Local Lighting Fixtures

Continuous lamps set in a long trough over the center of the reading table avoid one serious objection to individual table lamps: the alternation of light and dark areas on the general working surface. Polaroid screens eliminate much of the reflected glare, but are expensive and reduce intensity by as much as 50 per cent.

An arrangement of local sources by Bassett Jones, to reduce glare, is shown below in plan and isometric.

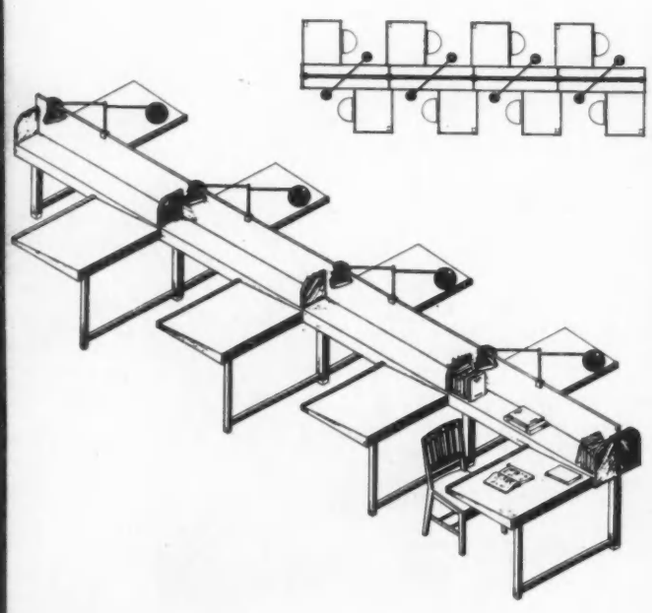
Stack Lighting

The problem here is to protect book searchers from the glare of light sources often within two feet of their eyes, and to reduce the amount of light on nearer books while building it up on those more remote — particularly those on lower shelves. Success toward achieving the ideal of a "luminous" atmosphere for stacks (suggested in the photograph below) is furthered by giving light conserving and reflecting values to as many surrounding surfaces as possible.

Carrell Lighting

General practice appears to favor an *indirect* fixture a little to the left of center and about a foot to the rear of the writing shelf, where ceiling height permits. Also advocated is an L-shaped fluorescent arrangement, to the left and rear at ceiling surface above the reader.

* "Elementary Illumination for the Ophthalmologist." By Le Grand H. Hardy, M.D., and Gertrude Rand, Ph.D., Archives of Ophthalmology, Jan. 1945, pp. 1–8. Other material in this brief treatment on library lighting is based on discussions with Dr. Rand; H. E. Richardson of the firm of Meyer, Strong and Jones, N. Y. C.; George Ainsworth, Ainsworth Lighting Inc., N. Y. C.; and on papers by Parry Moon, C. E. Ferree, Ward Harrison, M. Luckiesh and others.



Below, left: Reading table arrangement designed by Bassett Jones. Below: An approach to the "luminous" ideal in stacks

SOUND CONTROL IN LIBRARIES

By Edward J. Content, Acoustical Consultant

THERE is no new basic approach to obtaining essential quietness in a library. This still depends upon (1) sound isolation (prevention of transmission of outside sound into the library), and (2) sound conditioning (controlling the intensity and direction of sounds created within it).

Air conditioning remains the major factor in preventing outside noise from entering, by eliminating open windows. Wall mass also has such a major effect upon noise penetration that, despite all talk of panel schemes, masonry wall construction might well be considered purely for its acoustical advantages, particularly where main reading rooms are to be located permanently. When masonry walls cannot be utilized or are impractical, then exterior walls should be of double wall construction with dead air space and sound absorbing materials between.

Air conditioning systems employed can be especially designed for quiet operation by enlarging ducts to reduce air velocity to approximately one-half that used in commercial space-conditioning, and lining them with sound-absorbing sheets. It is unnecessary to line the entire system, but acoustical sheet is usually applied for a distance back from openings of at least 10 times the average cross-sectional dimensions of the duct. For example, a duct, 10 in. by 12 in. would be lined for a distance of at least 9 ft. 2 in. from every opening.

There has been discussion regarding the degree of quietness to be sought in a library. Some believe that by reducing the overall noise level unduly the ear is made overly sensitive to sudden sounds. But the consensus is that noise within a reading room should not exceed 30 decibels, approximately the same intensity of sound as that encountered in a quiet residence.

Sound-absorbing materials used, such as wall coverings, acoustical ceilings, and resilient flooring, are selected for their efficiency in absorbing higher sound frequencies, since high frequency noises at average intensity are the most disturbing to a person with average hearing. Reverberation time, although a secondary factor, should be reduced to somewhere between one-half and three-fourths of a second.

In hanging acoustical ceilings, the filler beams that carry perforated ceiling pans can be bolted through felt to the main beam; and pans lined with a sound-absorbing material, providing particularly quiet ceiling construction.

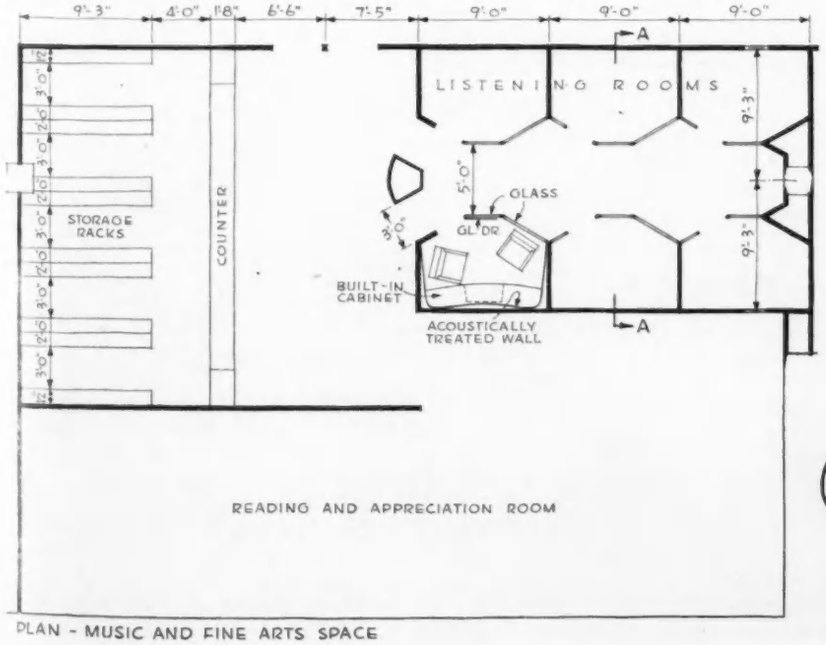
This is varied somewhat in studies for the library at University of Iowa. There, since ceiling pans will act as air ducts, perforations cannot be blocked with filler material. Consequently, acoustical material will be applied only to the under surface of floor slab above the hung ceiling.

For floor surface treatment, the writer prefers linoleum because it is resilient and absorbs the sound of footsteps. Hand trucks for the transport of books sometimes impose an objectionable noise problem. In areas of very considerable traffic of this nature, a 2-in. layer of street paving asphalt will materially reduce noise of travel.

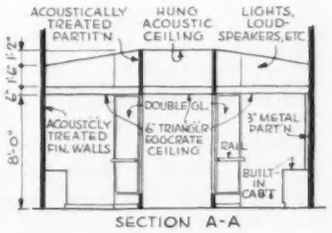
In college libraries, bookstack areas now require the same careful acoustical treatment as reading rooms, due to frequent introduction of individual study areas and seminar rooms in their close vicinity. They can no longer be considered as isolated areas.

The new concept of libraries includes such additional facilities as auditoriums, and listening rooms in which to play recordings. For acoustical treatment of auditoriums, see ARCHITECTURAL RECORD, June, 1946, Architectural Engineering Section. A music room or studio imposes a special problem. It preferably should be a "room within a room," by erecting a lightweight interior that is within, yet completely separated, from the rest of the structure. This is achieved through use of shock-absorbing wall and floor isolators. No through connections are used. In fireproof floor construction these are small H-section sleepers, riding on felt-lined spring isolators. Intervening space is filled with sound-deadening material. A double layer of felt paper is laid over the sleepers, after which a metal lath is laid down and thoroughly bonded to the H-sections, to act as reinforcement. The finished floor is usually a 2-in. layer of rich-mixture concrete, covered with a resilient flooring.

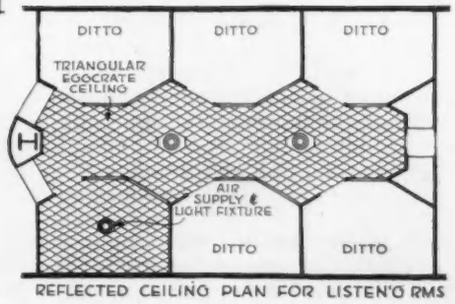
Rudiments of an audio-visual department are contained in this plan of a music appreciation area within proposed library at M.I.T. Storage space for recordings and listening rooms are well screened from reading room, yet closely related to it. Partitions and hung ceiling over listening rooms are acoustically treated, while egg-crate ceiling serves as a sound baffle as well as a lighting aid



PLAN - MUSIC AND FINE ARTS SPACE

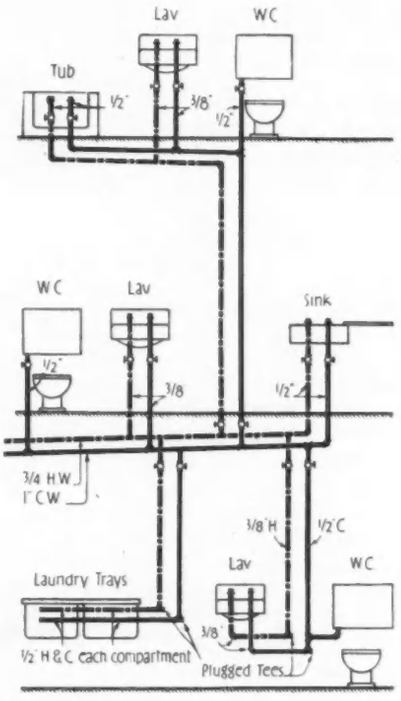


SECTION A-A



REFLECTED CEILING PLAN FOR LISTEN'G RMS

PRODUCTS for Better Building



Widespread attention is being given today to the need for adequate service piping in houses to meet increasing water requirements, in a campaign that parallels an earlier drive for adequate house wiring. ARCHITECTURAL RECORD'S *Time-Saver Standards made this recommendation in 1936 (note 1-in. cold water line)*

ADEQUATE PIPING

The increasing water requirements of the average house reflect today's trend toward higher ratios of bathrooms and showers to other rooms, acceptance of the ground floor lavatory as practically essential, and greater use of automatic laundry machines, electric dishwashers, garbage-disposal units, and lawn-sprinkling equipment. The size of original service pipe in a house governs the satisfaction a homeowner can receive from this equipment, and places a limitation upon additional equipment he may some time wish to install. Consequently, adequate water piping standards for houses are now being stressed, particularly the acceptance of service pipe with a minimum interior dimension of 1 in.

REVERSE-CYCLE HEATING AND COOLING

Use of electrical refrigerating units in air conditioning systems for heating as well as cooling has long interested engineers. That heat is produced by the initial compressive action of the refrigeration cycle is generally known. And it remained to find a way to step up this heat, when desired, to a point where an air conditioning unit might be practicable for room heating as well as cooling. In laboratory tests this has been accomplished by using outdoor air or well water to warm up the colder refrigerant before it returns to the compressor. By borrowing heat from a relatively warmer outside source, a higher temperature can therefore be produced economically in the compression chamber. Efficiency of the process is of course limited somewhat by the temperature of the outside air, because if it falls very low, little heat can be borrowed.

It is interesting, therefore, to hear about a new air conditioning unit, *Airtopia*, which appears to operate on this principle. It is announced as a complete air conditioning unit, consisting of a reversible-cycle refrigeration system, so constructed that cooling or heating, and dehumidifying or humidifying of room air can be accomplished automatically as desired. It is said to heat without employing any combustible fuel or heating elements, heating and cooling being only a reversal of function. When heating, Airtopia draws in air from outside, which passes over the relatively colder refrigerated coils and surrenders its heat. Heat thus absorbed is transferred to the conditioned-air coil on opposite side of the unit, and air from the room is passed over this warm coil. When used for cooling, room air is passed over the refrigerated coil and returned to the room, while outside air is circulated through the unit to carry off the heat thus absorbed. At the same time, room air is humidified while being heated, dehumidified while being cooled, and dust is removed by filters. Drayer-Hanson, Inc., Dept. AR, 767 East Pico Blvd., Los Angeles 21, Calif.

PAINTING IN LIGHT

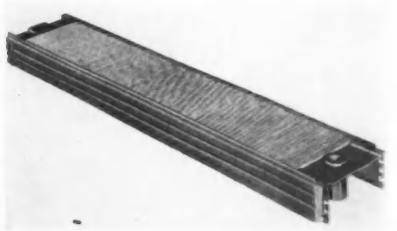
Glowing murals individually mounted in shadow boxes and edge-lighted from a concealed source have recently been added to the Lounge of Hotel Sheraton, New York, again demonstrating the decorative effects possible with *Plexiglas*, the transparent plastic developed by Rohm & Haas Co., Philadelphia. Plexiglas possesses a "light-piping" property; light that is introduced at the edge of the sheet will travel indefinitely within the sheet until it reaches an engraved or painted design, which releases the light

Lounge features "paintings" in plastic

into the room. Thus, designs that are scribed, etched, or painted on Plexiglas become luminous when edge-lighted, usually by fluorescent tube. Edge of each sheet where light is introduced can be colored so that the complete scene appears in color as well as light. Murals were designed and executed by Endicott Corp. of Boston, Mass.

SPRINGLATCHES

Ever try to open a night-latch with one hand, when the other is full of packages? A one-arm springlatch, No. 040 in a new line of night-latches, is designed to make this possible. Because of patented features, the latchbolt of this lock is held back automatically when it is retracted by the key, permitting withdrawal of the key and opening of the door with the same hand. The latchbolt then springs out automatically and re-locks the door as it closes. Other night-latches in the line, Nos. 42, 042, 44, 047, and 2, feature extra-throw deadlatches, and other design and operating improvements. The Yale & Towne Mfg. Co., 200 Henry St., Stamford, Conn.

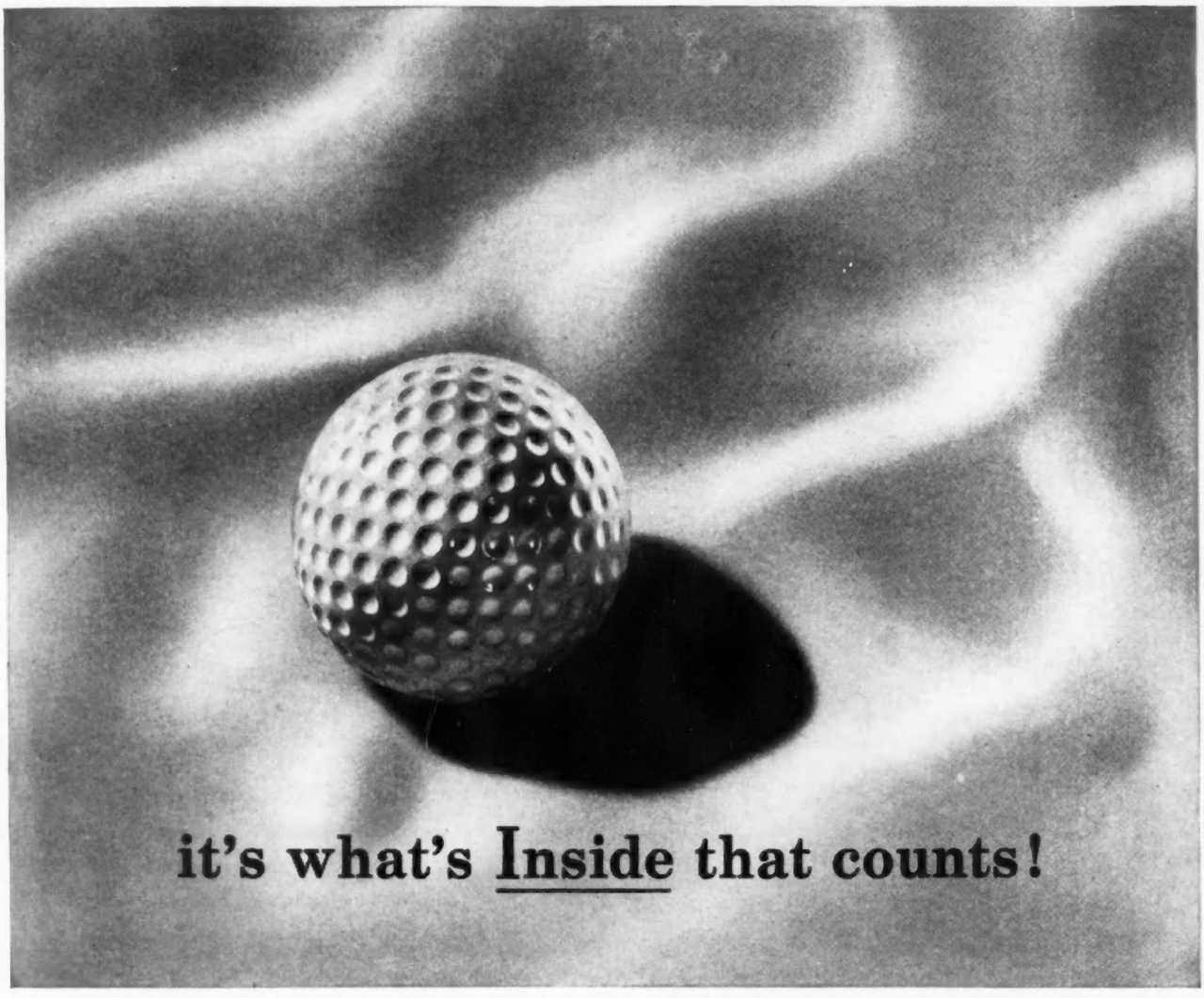


Convector unit is lightweight and compact

CONVECTOR UNIT

New convector-type heating unit for buildings is completely nonferrous, and designed for maximum durability along lines of convector units supplied to Navy vessels during the war. Although structurally stronger, the unit is lighter and more compact than earlier models, permitting faster installation. Headers, tubes, and fins are copper or copper alloy

(*Continued on page 132*)



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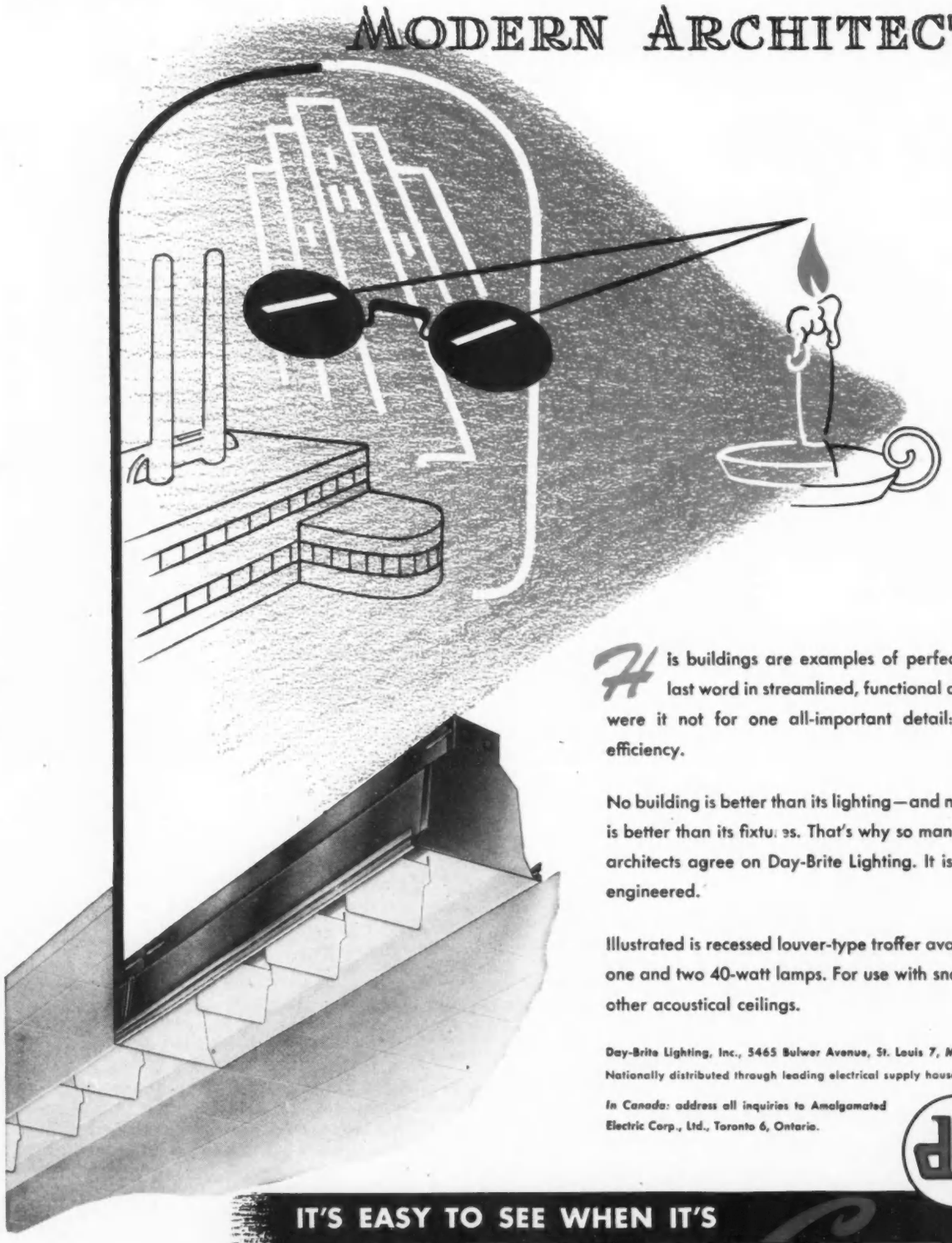

His buildings are examples of perfection—the last word in streamlined, functional design . . . were it not for one all-important detail: Lighting efficiency.

No building is better than its lighting—and no lighting is better than its fixtures. That's why so many leading architects agree on Day-Brite Lighting. It is optically engineered.

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IT'S EASY TO SEE WHEN IT'S

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LIBRARY BOOKSTACK DATA

GLOSSARY OF TRADE TERMS

Section — Shelving between two shelf supports

Compartment — Two sections back to back

Stack Columns — Members which act as shelf supports and vertical uprights, dividing compartments and carrying stack loads

Range — A group of sections (single-faced range) or compartments (double-faced range) with shelf supports common to adjacent sections

Tier — One level in a bookstack

Deck — A stack room floor — usually one of the intermediate floors of a multi-tier stack

Carrell — A space or cubicle provided in a stack for individual study — usually equipped with desk and shelves

Aisles

Main Aisle — The "Main Street" of a bookstack

Cross Aisle — Secondary aisle branching off main aisle

End Aisle — Aisle along the wall of a bookstack

Range Aisle — Aisle between two ranges

Booklift — Dumbwaiter adapted to library use

Book Conveyor — Power-operated device for mechanical delivery of books from stacks to users in a multi-tier installation

SHELF AND STACK DATA

Height of Bookstack — Generally 7 ft. 6 in. measuring from top surface of deck floor to top surface of deck floor above, in multi-tier installations; 7 ft. 2½ in. overall for one-tier stacks

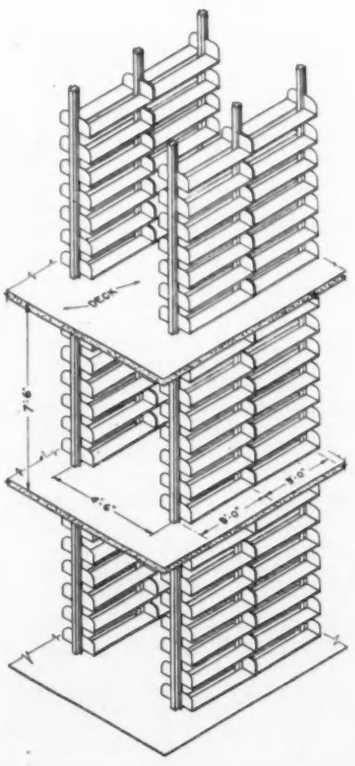
Shelf Sections — Normally 3 ft. long between shelf supports; 8, 9, 10, or 12 in. wide for books, and 18, 20, or 22 in. wide for bound newspapers

Ranges — Length, as required, preferably not over 30 ft., in even multiples of shelf length. Parallel ranges generally spaced on centers 4 ft. 6 in. apart

Aisles — Main, 3 to 4 ft. wide; range, 2 ft. 6 in. to 3 ft.

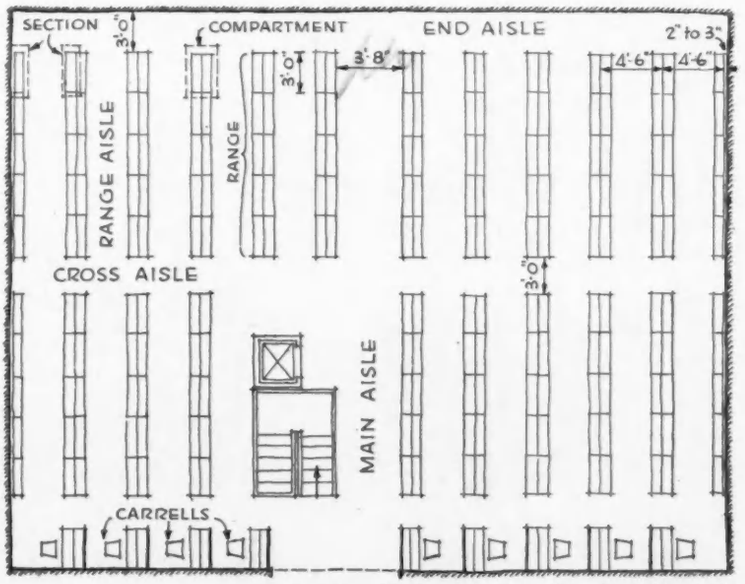
Stairs — Straight runs: well length, 8 to 9 ft., 12 risers; width, 2 ft. 6 in. or slightly more. Return runs: well length, 6 ft. 8 in., 12 risers; width, 5 ft. or slightly more

Deck Floor — Three general types: (1) reinforced concrete, usually 3½ in. thick; (2) flanged or formed steel plates, ⅛ in. to 3/16 in. thick (to bottom of flanges — about 2¾ in.); and (3) steel framework with 1¼-in. marble, slate, or stone (4⅝ in. from top of slab to bottom of supporting steel frame). Resilient floor covering adds only approximately ¼ in. thickness to slabs or plates



Left: Diagrammatic section of a multi-tier bookstack. The columns of successive tiers are joined to form a continuous column which supports both the deck and the shelving

Below: Plan of a bookstack, showing typical components and average spacing



Data courtesy of W. R. Ames Co.; Breeze Corps., Inc.; and Snead & Co.

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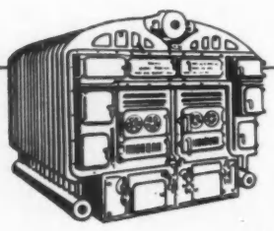

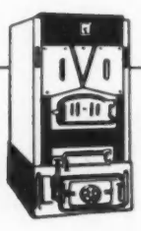

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CAST-IRON BOILERS

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NOVEMBER 1946 ARCHITECTURAL RECORD

LIBRARY BOOKSTACK DATA

UNIT STACK WEIGHTS

BOOKS

25 to 30 lb. per cu. ft. of ranges

STACK CONSTRUCTION

Quoted as 5, 8, and 8 to 10 lb. per cu. ft., depending upon the manufacturer

DECK FRAMING

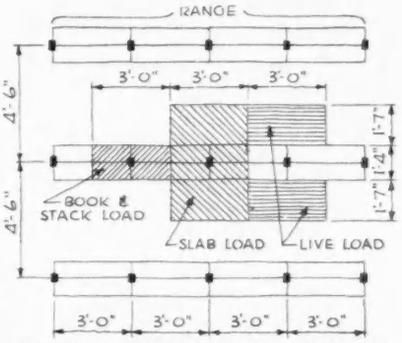
2 to 4 lb. per sq. ft. of gross deck area

DECK FLOORING

3-in. reinforced concrete slab, 38 lb. per sq. ft.; 3½-in. reinforced concrete slab, 44 lb. per sq. ft. gross area, with ⅛ in. tile or linoleum covering, 45 lb.; flanged steel plate floor, 12 lb. per sq. ft. of gross area; 1¼-in. marble or slate, 18 lb. per sq. ft., aisle area

LIVE LOADS

Building codes vary, but in general, for column loads, assume 40 lb. per sq. ft. of aisle area for live load and reduce this figure 5 per cent for each deck below the top deck



TYPICAL STACK LOADING DIAGRAM

STACK LOADS. The following tables illustrate the general variation of stack loads for from one to twelve tiers.

8″ SHELVING	Including stacks, books, live load, and 3½-in. concrete deck floor (A=typical aisle end support; B=typical intermediate support; C=typical wall end support).											10″ SHELVING											
TIERS	1	2	3	4	5	6	7	8	9	10	11	12	TIERS	1	2	3	4	5	6	7	8	9	10	11	12
A	495	2,320	4,120	5,890	7,630	9,340	11,020	12,670	14,290	15,880	17,440	18,970	A	620	2,570	4,490	6,380	8,240	10,070	11,870	13,640	15,380	17,090	18,770	20,420
B	990	3,000	4,990	6,960	8,910	10,840	12,750	14,640	16,510	18,360	20,190	22,000	B	1,240	4,000	6,240	8,460	10,660	12,840	15,000	17,140	19,260	21,360	23,440	25,500
C	495	1,500	2,600	3,590	4,570	5,540	6,500	7,450	8,390	9,320	10,240	11,150	C	620	1,750	2,870	3,980	5,080	6,170	7,250	8,320	9,480	10,530	11,570	12,600

BOOKSTACK CAPACITIES

Among formulas suggested for use in computing the size of stacks necessary to house a given number of books is the "Cubook" method, devised by R. W. Henderson of the New York Public Library.* The "cubook" is a measurement of stack capacity, defined as the "volume of space required to shelve the average book in the typical library." According to this formula, a single-faced section of stack, 3 ft. long and 7 ft. 6 in. high, has the following capacities:

100 "cubooks" (85 per cent octavos, 13 per cent quartos, and 2 per cent folios) †
117 volumes (87 per cent octavos and 13 per cent quartos)
132 volumes (octavos only)
67 volumes (quartos only)
12 volumes (folios only)

The "cubook" method makes provision for 10 per cent of each shelf to remain unoccupied since it often is impractical to load shelves to their full visible capacity.

To determine the number of sections required when the number of volumes to be shelved is known, the following formulas are used:

Let N = number of single-faced sections required (1 section = 100 "cubooks")

(1) For a typical library, when the "cubook" is considered directly applicable: N = Vols. ÷ 100
(2) For a library made up of octavos and quartos only: N = Vols. ÷ 117
(3) For a library made up of octavos only: N = Vols. ÷ 132.3
(4) For a library made up of quartos only: N = Vols. ÷ 67.5
(5) For a library made up of folios only: N = Vols. ÷ 11.7
(6) For a library made up of various size groups when the ratios are known:

N = [Octavos + (quartos × 1.96) + (folios × 11.3)] ÷ 132.3

Shelf Size

The foregoing formulas indicate the number of sections required but do not cover the number of shelves or the proportion of shelves of each width (8 in., 10 in., or 12 in.). In general, the following shelf data applies:

For folios — 13 12-in. shelves per section

For octavos and quartos — usually 7 shelves per section, divided as follows:

85 per cent 8-in. shelves
10 per cent 10-in. shelves
5 per cent 12-in. shelves

Area and Volume Requirements

The "cubook" can be reduced to approximate terms of area and volume requirements for bookstacks, as follows:

11.08 "cubooks" require 1 sq. ft. of stack floor area
1.48 "cubooks" require 1 cu. ft. of space in a stack

These values can be used as follows:

Required stack floor area = No. "cubooks" × .090
Required space (cu. ft.) = No. "cubooks" × .676

SHELVING DATA FOR SPECIAL COLLECTIONS
(To be consistent with "Cubook" method, figures shown should be reduced by 10 per cent, to avoid overcrowding shelves.)

TYPE OF BOOK	Vols. per Foot of Shelf	Vols. per Foot of Single-Faced Range	Vols. per Shelf	Maximum Vols. per Single-Faced Section	Shelf Depth	Shelves per Section
Circulating (Non-Fiction)	8	56	24	168	8″	7
Fiction	8	56	24	168	8″	7
Economics	8	56	24	168	8″	7
General Literature	7	49	21	147	8″	7
Reference	7	49	21	147	8″ & 10″	6–7
History	7	49	21	147	8″	7
Technical and Scientific	6	42	18	126	8″, 10″ & 12″	7
Medical	5	35	15	105	8″ & 10″	6–7
Law	4	28	12	84	8″	7
Public Documents	5	35	15	105	8″	7
Bound Periodicals	5	35	15	105	10″ & 12″	5–7
U. S. Patent Specifications	2	14	6	42	8″	7
Art	7	42	21	126	10″ & 12″	5–6
Braille	4	24	12	72	15″	5–6

* Library Journal, Nov. 15, 1934, and Jan. 15, 1936.
† According to American Library Association, an octavo is about 8 to 10 in. high; a quarto, 10 to 12 in., and a folio, over 12 in.

K&M "Century" ASBESTOS-CEMENT SIDING and ROOFING SHINGLES

This attractive cottage—with "Century" Asbestos roof and sidewalls—has three qualities that countless GI's and other home buyers want... good looks, sound value, and durability.

"Century" Shingles and Siding are economical in cost, suitable for any type building, and they last indefinitely. They are proof against weather, fire, rot, rodents, termites, and never need to be painted because they are made of asbestos and cement.

"Century" Siding comes in color-fast shell white and graytone . . . in ready-to-use 24" lengths... with grained, weathered surface and in wavy butt-line style.

"Century" Roofing Shingles are supplied in various styles to suit any taste, fit any architectural plan, harmonize with any environment.

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Jenkins PRACTICAL PIPING LAYOUTS 16

How to plan a DIESEL ENGINE COOLING WATER CIRCUIT WITH WASTE HEAT RECOVERY

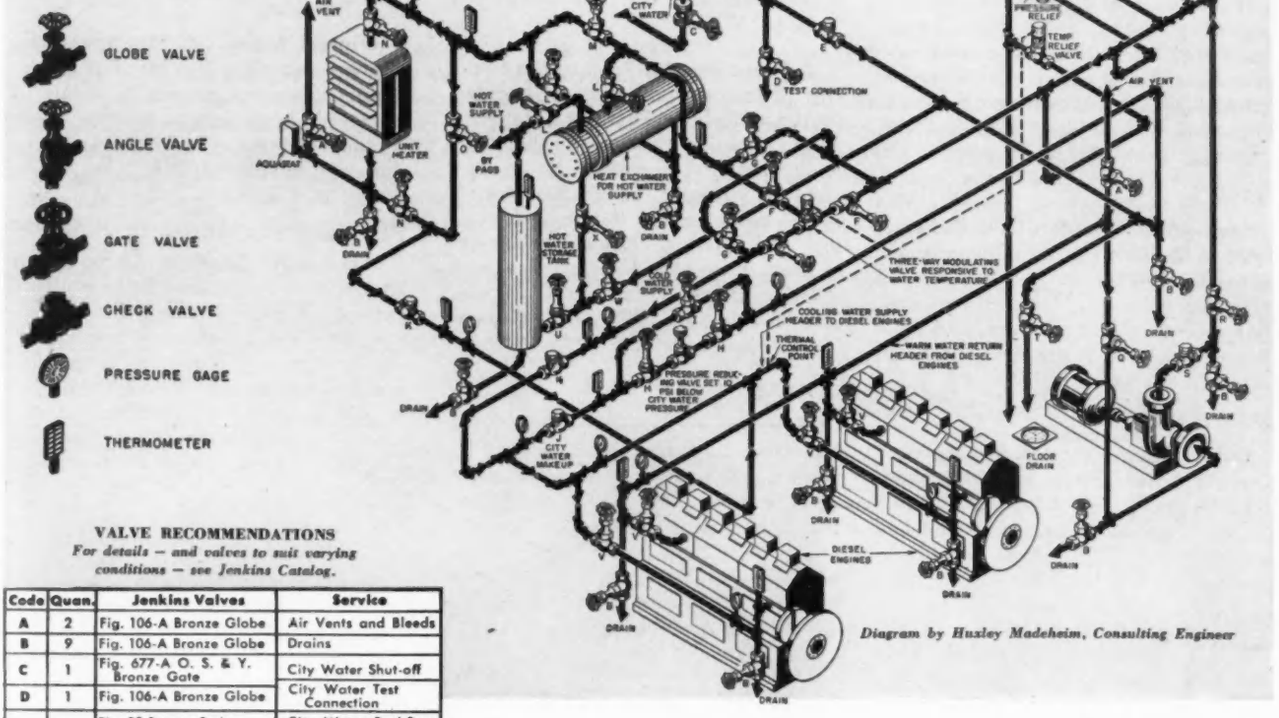

Diagram by Huxley Madeheim, Consulting Engineer

VALVE RECOMMENDATIONS
For details — and valves to suit varying conditions — see Jenkins Catalog.

Code	Quan.	Jenkins Valves	Service
A	2	Fig. 106-A Bronze Globe	Air Vents and Bleeds
B	9	Fig. 106-A Bronze Globe	Drains
C	1	Fig. 677-A O. S. & Y. Bronze Gate	City Water Shut-off
D	1	Fig. 106-A Bronze Globe	City Water Test Connection
E	1	Fig. 92 Bronze Swing Check	City Water Backflow Prevention
F	3	Fig. 47 Bronze Gate	3-way Mod. Valves Shut-off
G	2	Fig. 106-A Bronze Globe	3-way Mod. Valves By-pass
H	2	Fig. 47 Bronze Gate	P.R.V. Shut-off
I	1	Fig. 106-A Bronze Globe	P.R.V. By-pass
J	1	Fig. 92 Br. Swing Check	Prevention of back-flow into City Water
K	2	Fig. 92 Br. Swing Check	City Water Check-off
L	2	Fig. 106-A Bronze Globe	Heat Exchanger Shut-off Control
M	1	Fig. 106-A Bronze Globe	Heat Exchanger By-pass
N	2	Fig. 106-A Bronze Globe	Unit Air Shut-off and Control
O	1	Fig. 106-A Bronze Globe	Unit Air By-pass
P	1	Fig. 106-A Bronze Globe	System Manual Bleed
Q	1	Fig. 47 Bronze Gate	Pump Suction Shut-off
R	1	Fig. 106-A Bronze Globe	Pump Discharge Shut-off
S	1	Fig. 92 Br. Swing Check	Pump Discharge Check
T	1	Fig. 106-A Bronze Globe	Floor Drain Trap Fill
U	1	Fig. 47 Bronze Gate	Hot Water Tank Shut-off
V	4	Fig. 106-A Bronze Globe	Engine Cooling Water Control
W	1	Fig. 106-A Bronze Globe	Cold Water Supply
X	1	Fig. 47 Bronze Gate	Cold Water to Heat Exchanger

A typical circuit is shown for recovering waste heat in small plants, garages, laundries, etc., where a Diesel Engine is used to generate electricity. Heat in the cooling water is dissipated through unit heater, and also through an exchanger for domestic hot water supply. Heat dissipation can be balanced between the two units by means of globe valves. An aquastat shut-off is provided for unit heater fan.

Overheating is prevented by a temperature and pressure relief valve. Overcooling is prevented by a three-way modulating valve which by-passes a portion of cooling water back to circulating pump should the demand from heat exchanger and unit heater be too great.

Suitable protection is provided against low city water pressures and provision is made for shutdowns and freeing air from system.

Copies of Layout No. 16, enlarged, with additional information will be sent on request . . . also future Piping Layouts. Just Mail coupon.

Other types and pressure ranges of Jenkins Valves can be used for this layout, according to factors involved. Consultation with accredited piping engineers and contractors is recommended on major installations.

A CHOICE OF OVER 600 JENKINS VALVES

To save time, to simplify planning, to get the advantages of Jenkins specialized valve engineering experience . . . select all valves from the Jenkins Catalog. Jenkins Valves assure *lowest cost in the long run.*

Jenkins Bros., 80 White Street, New York 13; Bridgeport; Atlanta; Boston; Philadelphia; San Francisco; Chicago; Jenkins Bros., Ltd., Montreal; London, England.

LOOK FOR THIS JENKINS TRADE MARK **DIAMOND MARK**
Since 1864 *Jenkins Bros*

JENKINS VALVES

For every Industrial, Engineering, Marine, Plumbing-Heating Service . . . in Bronze, Iron, Cast Steel, and Corrosion-resisting Alloys . . . 125 to 600 lbs. pressure.

Sold through Reliable Industrial Distributors Everywhere.

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Name .....
Address .....
Company .....
.....

MANUFACTURERS' LITERATURE

AIR CONTROL

Airtopia. Bulletin and specification sheet describing a new air conditioning unit consisting of a reversible cycle refrigerating system which cools, heats, ventilates, filters, humidifies and dehumidifies the air automatically as required. 8 pp., illus. Drayer-Hanson, Inc., Dept. AR, 767 E. Pico Blvd., Los Angeles 21, Calif.

BOILERS

Springfield Standardized Boilers, Type M (Bulletin 746). Full description of the Type M boiler, its specifications, advantages claimed. Measurements and data table, ordering information. 4 pp., illus. Springfield Boiler Co., 1900 E. Capitol Ave., Springfield, Ill.

CEMENT PAINT

Color Chart, Bondex Waterproof Cement Paint. Folder showing colors available, giving full information about the paint, and including a chart of color schemes for home exteriors. The Reardon Co., St. Louis 6, Mo.

DOORS

Ellison Balanced Door Unit. Explains the Ellison balance principle, illustrates various door arrangements, diagrams construction and installation details, and gives full information on both the standard designs and the possibilities offered by special designs. Shows typical installations. 12 pp., illus. Ellison Bronze Co., Inc., Jamestown, N. Y.*

FLOORING

Koroseal Floors Are Here! Colorful booklet describing Koroseal floors, their qualities, application, versatility. Suggestions for installations. Chart of the colors available. 10 pp., illus. Sloane-Blabon Corp., 295 Fifth Ave., New York, N. Y.

GREASE INTERCEPTOR

Handbook on the Proper Sizing and Selection of Grease Interceptors. By John H. Schmid and Leroy J. Bonnell. Describes purpose, operation and advantages of grease interceptor, gives method of selection, catalogs units offered. 8 pp., illus. J. A. Zurn Mfg. Co., Erie, Penn.*

HARDWARE

Yale Catalog. Large new catalog for dealers, arranging all the manufacturer's hardware items in two-page spreads, each of which displays hardware of one type, quality and price range. Divided into 12 sections, each indexed separately. 450 pp., illus. For dealers only. Yale & Towne Mfg. Co., Chrysler Bldg., New York 17, N. Y.*

A Procedure for Testing the Locking Effectiveness of Self-Locking Nuts and Related Fastening Devices. By J. A. Sauer. Describes in detail the equipment and procedure for making tests for vibration, installation and removal torque, re-use torque, and wearing and plating. Explains how to evaluate these tests in connection with individual fastener problems. 16 pp., illus. Elastic Stop Nut Corp. of America, Union, N. J.

HEATING

Dunham Baseboard Simplicity Heating System (Bulletin 639). Bulletin describing the advantages claimed for baseboard heating and illustrating how the system works. Diagram of placement in various rooms from one heating pipe that goes around the entire house. 6 pp., illus. C. A. Dunham Co., 450 E. Ohio St., Chicago 11, Ill.*

Williams Vented Wall Warmolater and Williams Warmolator. Two illustrated folders describing heating units for natural, butane or propane gas. Give installation methods, list advantages claimed, sizes obtainable, capacities. Williams Radiator Co., Dept. AR, 3115 Beverly Blvd., Los Angeles 4, Calif.

LIBRARY STACKS

Ames Bookstacks. Basic elements of bookstack design: types of equipment, arrangement, architectural detail, installation details and diagrams, engineering information, bookstack capacities, accessories, nomenclature. Diagrams include a typical bookstack plan, stairways in multi-tier stacks; tables include working loads for intermediate stack columns, and dead load on stack columns. Explanation of Cubook measurements to determine bookstack capacities. 36 pp., illus. W. R. Ames Co., Dept. AR, 150 Hooper St., San Francisco, Calif.

LIGHTING

"Day-Line" Industrial Fixtures (Bulletin 30-A). Description of the several units in the line, specifications, installation details, servicing features, pricing data. Includes a chart on figuring footcandle intensities. 12 pp., illus. Day-Brite Lighting, Inc., 5411 Bulwer Ave., St. Louis 7, Mo.*

Pittsburgh Permaflector Lighting (Catalog 46). Catalog of incandescent lighting equipment for commercial, institutional and industrial applications. Data on the fundamentals of good lighting, calculating illumination requirements. Light distribution charts and installation diagrams. 114 pp., illus. Pittsburgh Reflector Co., Oliver Bldg., Pittsburgh 22, Penn.*

PLASTIC SIGNS

Winters Signs (1) for Hospitals, (2) for Hotels, (3) for Buildings. Three pamphlets describing a line of engraved plastic signs to meet the needs of different types of buildings. 4 pp. ea., illus. Winters Stamp Mfg. Co., 51 W. Jersey St., Elizabeth, N. J

PROTECTIVE COATING

Amercoat Coating Comparison Chart. A new technical bulletin giving factual information in condensed form about the entire Amercoat line. Chart shows all characteristics and properties, serves as a guide for selecting the proper coating, preparation of the surface, and methods of application. 8 pp. Amercoat Division, American Pipe and Construction Co., P. O. Box 3428, Terminal Annex, Los Angeles 54, Calif.

SELLING STEAM

Steam Sales Improve Operation of Municipal Power Plant. The case history of the Piqua Municipal power system at Piqua, Ohio, which several years ago went into the business of selling steam to nearby industrial plants. Advantages of such sale of steam. Photographs and blueprints, cost figures, installation story. 10 pp., illus. The Ric-Wil Co., Cleveland, Ohio.*

TIME CONTROLS

Special-Built Time Switches for the Volume User (Bulletin T-55). Data on six typical examples of low-cost time switches, including diagram of each, its purpose, specifications. General information on other items in the line. 4 pp., illus. Automatic Temperature Control Co., Inc., 34 E. Logan St., Philadelphia 44, Penn.

WALL SYSTEM

The New Gold Bond Hollow Wall System. Description of a new system using two free standing partitions to house plumbing, wiring and ducts, to deaden sound transmission, to give a higher fire rating, and to lower job costs. Compares sound insulation value with other types of wall. Gives recommended specifications, includes a section of detailed, traceable architectural drawings. Includes also a page of sound insulation data, with charts illustrating sound insulation in decibels and the threshold of audibility. 10 pp., illus., plus drawings. National Gypsum Co., Buffalo 2, N. Y.*

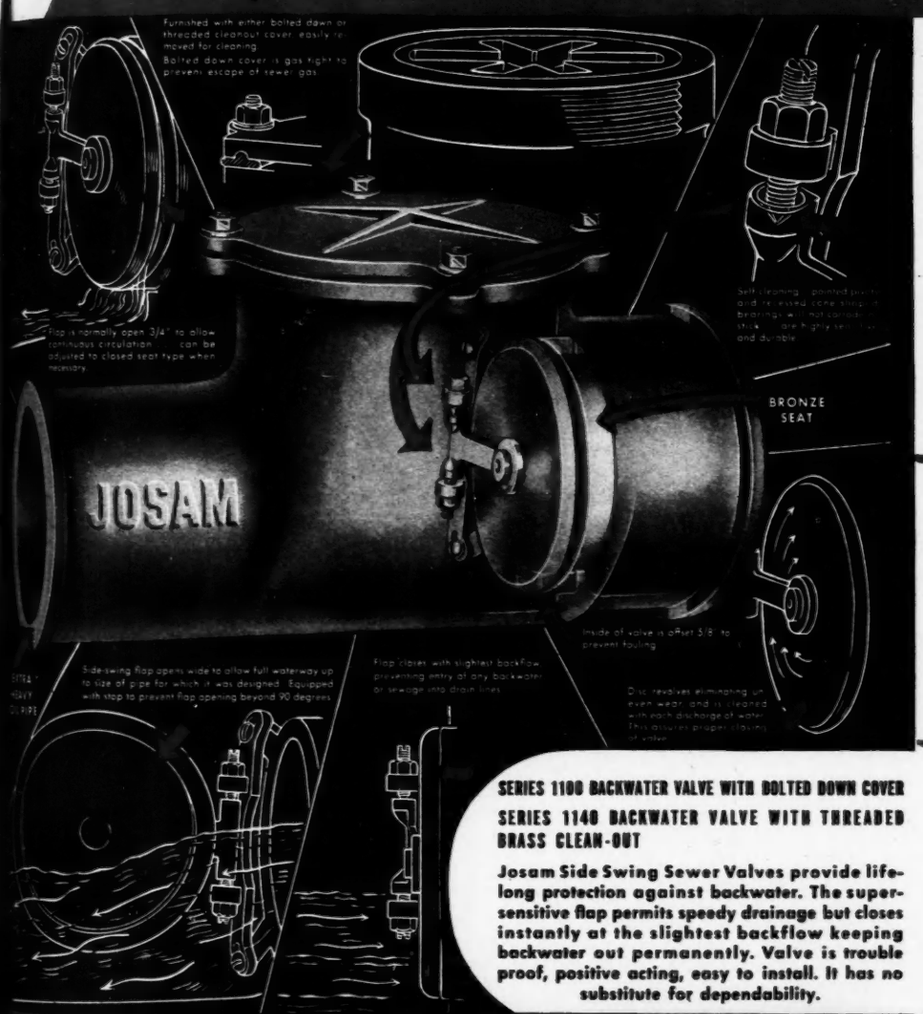
(Continued on page 148)

* Other product information in Sweet's File, 1946.

There's a HOLE in every basement that's DANGEROUS

In every basement...whether it be in residence or building ...where there is a drain outlet to the sewer, there is a potential source of danger! Unless this hole through which drainage is carried to the sewer is protected against backwater, disaster can quickly result. For if the sewage facilities of the community are not adequate to carry off the heavy rains and floods, the water in the sewers will back up through basement floor drains into the basement. With it will come unsanitary residue that will cause costly and lasting damage. To prevent this ever happening to the homes and buildings on which you are working, use one of the many Josam Backwater Controls. Josam has specialized in the pioneering of products to eliminate the hazard of backwater. Their cost is so little compared with the lasting protection they provide. Send coupon today for complete information on this vital problem.

THESE Josam PRODUCTS provide *Permanent Protection*

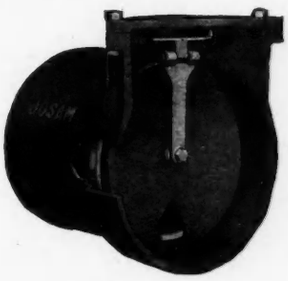

Furnished with either bolted down or threaded cleanout cover easily removed for cleaning.
Bolted down cover is gas tight to prevent escape of sewer gas
Flap is normally open 3/4" to allow continuous circulation ... can be adjusted to closed seat type when necessary.
BRONZE SEAT
JOSAM
Inside of valve is offset 3/8" to prevent fouling
Side-swing flap opens wide to allow full waterway up to size of pipe for which it was designed. Equipped with stop to prevent flap opening beyond 90 degrees
Flap closes with slightest backflow preventing entry at any backwater or sewage into drain lines
Disc revolves eliminating uneven wear, and is cleaned with each discharge of water. This assures proper closing of valve

SERIES 1100 BACKWATER VALVE WITH BOLTED DOWN COVER

SERIES 1140 BACKWATER VALVE WITH THREADED BRASS CLEAN-OUT

Josam Side Swing Sewer Valves provide lifelong protection against backwater. The supersensitive flap permits speedy drainage but closes instantly at the slightest backflow keeping backwater out permanently. Valve is trouble proof, positive acting, easy to install. It has no substitute for dependability.

Josam manufactures the right type of backwater control for every location.



SERIES 1100½
for Sewer Outlets, Sewer and Water Lines, Sewage Disposal Plants.

SERIES 750-A
Combined Drain and Deep Seal Trap with Backwater Valve.

SERIES 500-VT
Floor Drain with Tractor Grate and Backwater Valve.

JOSAM MANUFACTURING COMPANY
ESTABLISHED 1919
General Offices, Ferguson Bldg., Cleveland 14, Ohio - Plant, Michigan City, Indiana
Representatives in all Principal Cities
JOSAM-PACIFIC CO.—West Coast Distributors
EMPIRE BRASS COMPANY, LTD.—Canadian Distributors
For our Catalog in Sweets'

JOSAM MFG. CO., 304 Ferguson Bldg., Cleveland 14, Ohio

Send Data on ☐ Backwater Valves
☐ Drains with Backwater Valves

NAME_____

FIRM_____

ADDRESS_____

CITY and STATE_____ ZONE_____

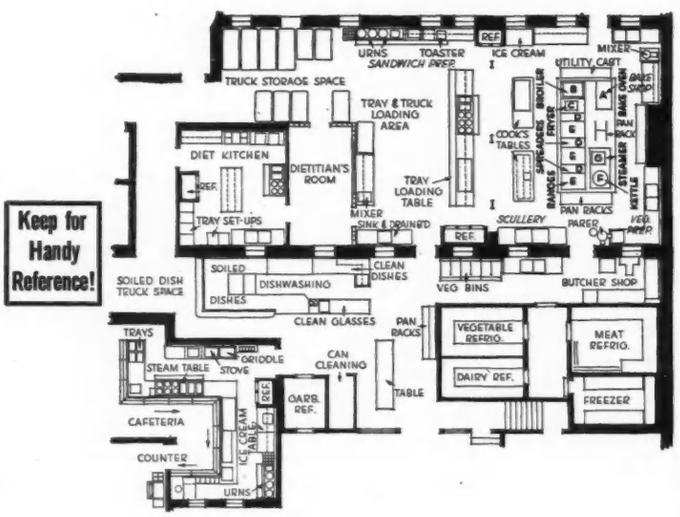
(*Continued from page 122*)

to eliminate electrolytic corrosion hazards resulting from use of dissimilar metals. It is of one-piece construction, achieved by brazing or otherwise mechanically bonding all parts into an integral unit, together with rigid steel side plates. Universal header reportedly makes possible use of one style of heating unit on practically any two-pipe steam or hot-water piping arrangement. Other announced features are adjustable brackets for quickly obtaining correct pitch and elevation, and choice of two types of air chambers for use on hot-water systems. Additional enclosure types and sizes are announced. The flush recessed style of enclosure, discontinued during the war, is being made again. All recessed and floor-cabinet enclosures now are available in a 16-in. height for use under low windows. In addition, the 3⅝ in. depth of convector has been included in the line. Modine Mfg. Co., Racine, Wis.

KITCHEN PLAN NO. 38:

Thirty-eighth of a series of successful mass-feeding kitchen plans.

Incorporated in this kitchen plan in a general medical hospital of 495 beds are modern concepts of operating and cleaning ease.



COOKING EQUIPMENT USED:

(a) 1 No. 959 BLODGETT GAS-FIRED BAKING AND ROASTING OVEN
(b) 1 Gas-fired broiler
(c) 1 Gas-fired fryer
(d) 3 Spreader plates
(e) 3 Gas-fired ranges
(f) 1 Stock kettle
(g) 1 Vegetable steamer

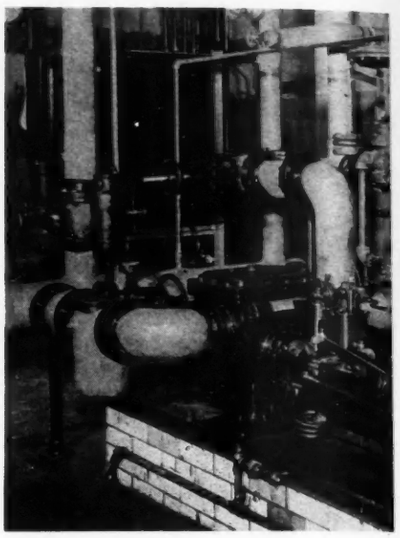
Designed by: A. Mathesius of H. F. Rutley Co., Brooklyn, N. Y.

Specialized Cooking Tools are an important part of this plan, enhancing a smartly arranged straight-line production flow and loading zone. The No. 959 Blodgett Oven provides easy baking, as well as vegetable, meat and dessert production in a flexible two-section unit.

The G. S. BLODGETT CO., Inc.

50 Lakeside Avenue **Burlington, Vermont**

The new, de luxe edition of "Case Histories of Successful Mass-Feeding Installations" is ready. Send for your copy now!



Long life claimed for magnesia insulation

PIPE INSULATION

Inspection of insulation in the Conway Building, Chicago, now undergoing major rehabilitation, indicated that *85% Magnesia Insulation*, which was installed on all steam and hot water piping almost 40 years ago, is still in excellent condition. First introduced commercially in 1886, this insulating material contains 85 per cent magnesia precipitate, filtered to a wet paste, and mixed with 15 per cent asbestos fiber, then dried, and either ground into insulating cement or molded into blocks or pipe coverings, machined to size. Magnesia Insulation Manufacturers Assn., Washington, D. C.

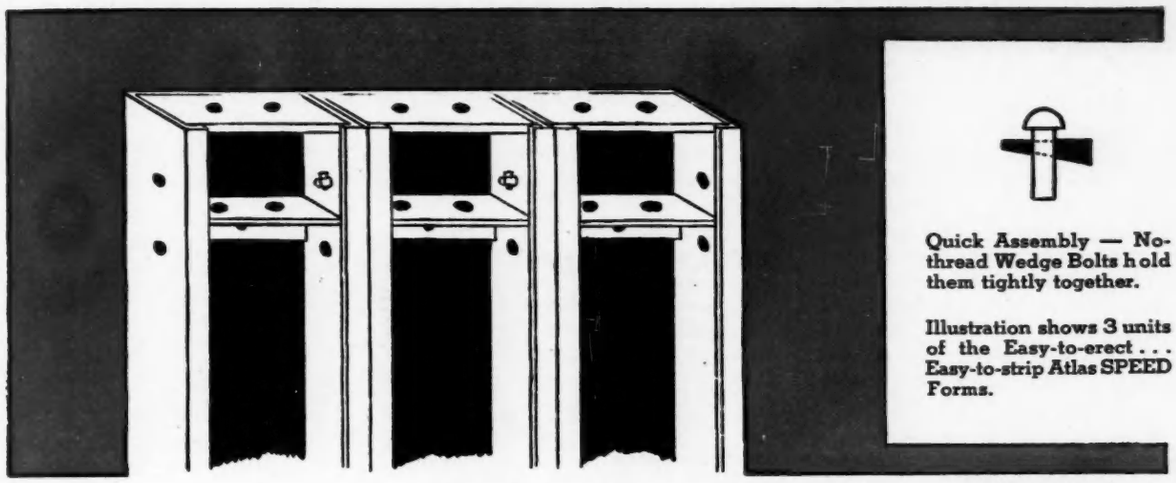
DOOR CLOSER

A new door control, for house, industrial, or office use, is designed to close the door quickly to a point within one inch of closed position and then ease it slowly and quietly the rest of the way. A mechanical adjustment is provided to increase or lessen tension as required. The manufacturer states that use of this control can eliminate the need for additional hardware on doors without locks which require hardware merely for closing security; and that heat, cold, or moisture will not affect operating efficiency. The control, constructed of cadmium-plated steel, comes in standard and heavy-duty sizes, weighing 1¼ lb. and 2½ lb., respectively. B. L. Mallory Co., 1201 East Eight Mile Rd., Hazel Park, Mich.

METAL AWNINGS

Ventilated aluminum awnings, known as *Koolvent*, feature alternating strips of aluminum with space provided between overlap for free circulation of air. This construction is said to prevent the for-

(*Continued on page 134*)



Quick Assembly — No-thread Wedge Bolts hold them tightly together.

Illustration shows 3 units of the Easy-to-erect . . . Easy-to-strip Atlas SPEED Forms.

Patent Applied for

RENT OR SALE

ATLAS WALL AND FLOOR FORMS

SPEED-UP Concrete Construction

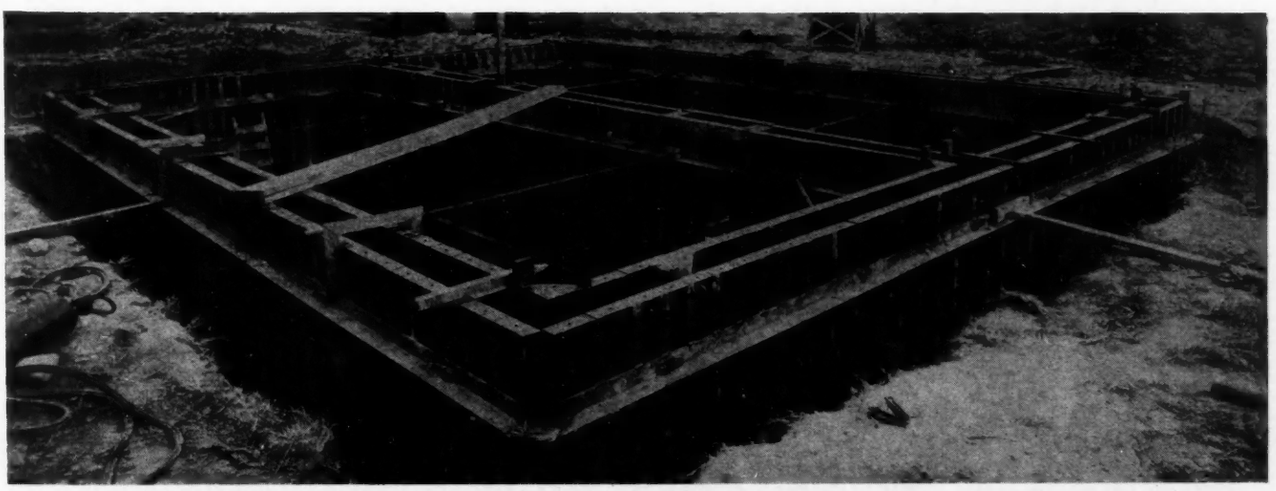
THIS NEW METHOD of Concrete Form Construction is cutting costs 25 to 50% on concrete wall and floor construction everywhere. Saves Time, Labor, and costs much less per use than plywood forms. Steel units — easy to strip, move and set up. Light weight, average only 35 lbs. per unit. Good for indefinite use — no repairs needed. No joists needed. Finish is smooth — no fins with Type B forms. Slight fins with Type A — No grain marks or knots with either. Now used on more than 20,000 homes. Also, many apartment houses, office buildings, factories, etc. Available for early delivery. Write for details and illustrated folder.

Even a girl can lift these light-weight steel forms. Average 35 lbs. per unit.

Irvington Form & Tank Corp.

WRITE Dept. A — IRVINGTON 23, NEW YORK

New York City Sales Office: 43 Cedar St. — Tel. Bowling Green 9-4030



Typical Atlas Steel foundation form with steel walers and fabricated units. In house construction, wood or steel walers are used

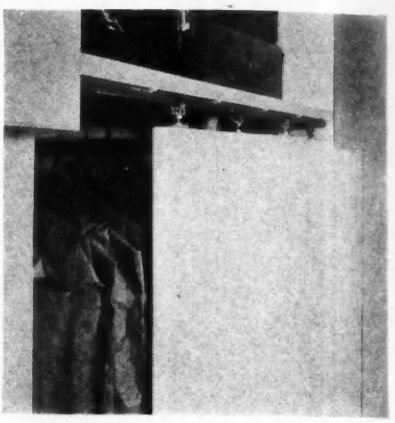
Atlas Steel Forms for every Purpose

(*Continued from page 132*)

mation of "heat pockets" common to other types of awnings and, by actual test, to reduce summer temperatures within rooms from 10° to 20°. The awnings are finished with two coats of baked enamel which can be cleaned with a damp cloth, and repainted at will to conform to changes in color scheme. Standard color combinations include red and white, green and white, blue and white, black and white, and maroon and white. Cream color may be substituted for white, or awnings can be furnished in natural aluminum finish or in solid colors. Kool-Vent Metal Awning Corp. of America, Keystone Bldg., Pittsburgh, Penn.

SLIDING DOOR HARDWARE

Ball-bearing suspension units are used with track assembly to support sliding doors. The steel track on which the door is hung is lightweight yet strong, in the shape of a miniature I-beam, and an aluminum floor guide is supplied to engage the grooved bottom of the door. The door hangers, which ride on rollers with ball bearings, can be adjusted in depth to accommodate slight variations in door size, and may be disengaged readily from the suspension beam for removal of the door. Similar suspension hardware is available for sliding curtains, made with curved as well as straight track, and employing a roller-bearing suspension unit for the curtain rings. Grant Pulley and Hardware Co., Broadway at 57th St., Woodside, N. Y.



Ball-bearing suspension units, riding on miniature I-beam, guide sliding door panel

KITCHEN VENTILATOR

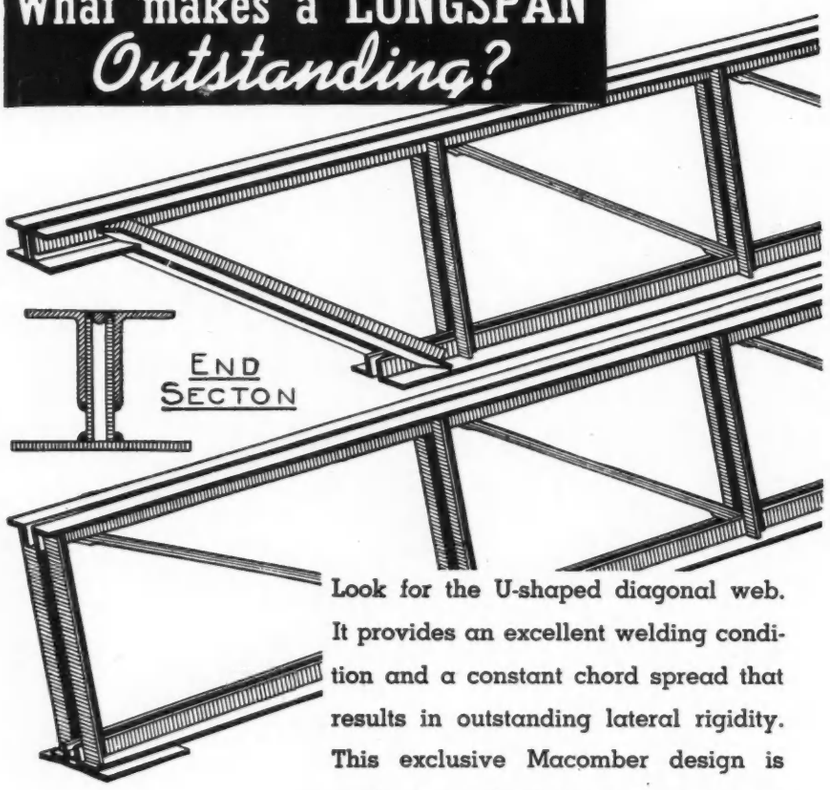
Operating on the outside of the wall with only a small grille visible from inside the kitchen, a new electric ventilator, *Kitchen-Aire Six* is designed to minimize operating noise, and features fire-resistant design with an enclosed fan-cooled motor entirely removed from the grease-laden air stream. Aluminum construction throughout is said to insure long and dependable service. Centrifugal-type balanced impeller reportedly operates efficiently against static pressures encountered in winter operation or duct applications. Only a 6-in. diameter opening through the wall is required; for other than side wall mounting, ventilator inlet enters between joists and standard sections of 6-in. pipe can be used for runs up to 30 ft. The *Kitchen-Aire Eight* is similar in design but with greatly increased capacity (¼ Hp. 110 volt) for restaurant kitchens and other industrial uses. Stewart Mfg. Co., 3209–11 East Washington St., Indianapolis 1, Ind.

WALL TILE

Distribution of *Veos Wall Tile*, manufactured by the Clyde Porcelain and Steel Corp., has been taken over by Armstrong Cork Co., and will be available through contractors who install as

(*Continued on page 136*)

What makes a LONGSPAN *Outstanding?*



Look for the U-shaped diagonal web. It provides an excellent welding condition and a constant chord spread that results in outstanding lateral rigidity. This exclusive Macomber design is made in underslung or square end types with sloping or parallel chords in lengths up to 70 feet. Here is a completely standardized structural unit, specified from load and span tables for unobstructed floor or roof support. Get our complete design information for your next project.

STEEL JOISTS
ROOF PURLINS
ROOF TRUSSES
LONGSPANS
ROOF DECKING
STEEL SIDING

MACOMBER
CANTON • OHIO
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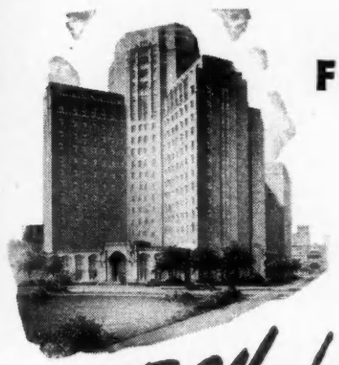


FOR HOSPITAL WIRING

The Modern Way is the Electrunite Way

NO JOB TOO BIG...NONE TOO SMALL...
for Safe, Dependable ELECTRUNITE E.M.T.
the *ORIGINAL* Lightweight Steel Raceway

There are three reasons why ELECTRUNITE E.M.T. (Electrical Metallic Tubing) is unequalled for ease of bending and rebending: (1) Uniformly high ductility. (2) The one-piece ELECTRUNITE Bender. (3) The ELECTRUNITE Bending System which simplifies the making of all standard bends, stubs and offsets.

12 Advantages

1. FULL PROTECTION
2. NO THREAD CUTTING
3. INCH MARKING
4. LIGHT WEIGHT
5. ✓ EASY TO BEND AND REBEND
6. STANDARD FITTINGS
7. EASY TO INSTALL
8. UNBROKEN CORROSION-RESISTANCE
9. KNURLED INSIDE SURFACE
10. UNIVERSAL ACCEPTANCE
11. LOW COST
12. WIDESPREAD DISTRIBUTION

For safe, dependable wiring protection—ease and convenience of installation—lowest possible original and maintenance costs—no other raceway affords the many advantages of Republic ELECTRUNITE E.M.T.—the *original* streamlined wiring raceway.

Consider these brief facts:

SAFETY—Inspection by Underwriters' Laboratories means positive assurance that ELECTRUNITE E.M.T. provides adequate electrical and mechanical protection throughout the job. Moreover, it is approved by The National Electrical Code for general purpose wiring in exposed, concealed and concrete slab construction.

EASE OF INSTALLATION—ELECTRUNITE E.M.T. is threadless . . . completely eliminates dirty, tedious thread-cutting . . . strong, water-tight joints are made quickly and easily with simple, compression-type couplings and box connectors. And because its weight is less than half that of threaded-type conduit, ELECTRUNITE E.M.T. is easier to bend, easier to handle and easier to install.

LOW COST—Actual installation records from all parts of the country prove conclusively that ELECTRUNITE E.M.T. saves valuable time and money on every type of job.

That's only part of the story. For complete details see your nearest Steel and Tubes Division Representative.

REPUBLIC STEEL CORPORATION
STEEL AND TUBES DIVISION • CLEVELAND 8, OHIO
Export Department: Chrysler Building, New York 17, New York

SEE SWEET'S FILE
or write us for detailed information on these Republic Steel Building Products
Pipe—Sheets—Roofing
Enduro Stainless Steel
Toncan Enameling Iron
Electrunite E.M.T.
Fretz-Moon Rigid Steel Conduit
Taylor Roofing Ternes
Berger Lockers, Bins, Shelving, Kitchen Cabinets
Truscon Steel Windows, Doors, Joists
and other building products

Republic
ELECTRUNITE E.M.T.
LIGHTWEIGHT THREADLESS RIGID STEEL RACEWAY

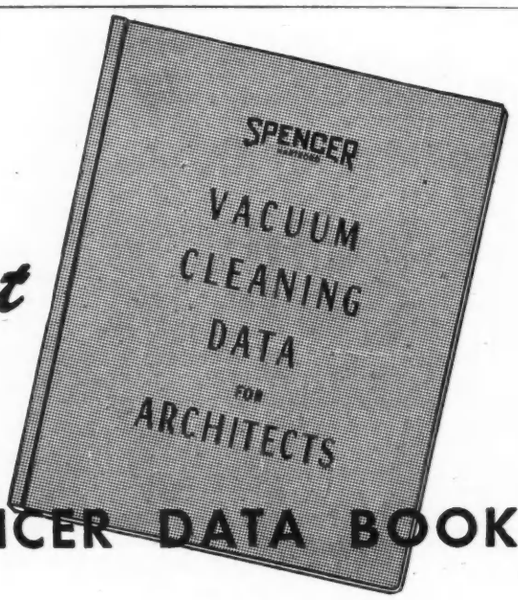
(*Continued from page 134*)

well as sell the material. This is a porcelain-on-steel wall tile, with a base of 20-gauge steel, coated on back and sides as well as front to insure moisture resistance and prevent rust. To install, an asphalt-saturated fiberboard, slotted to fit the tile, is first nailed to the wall. The tile is then secured to the fiberboard by means of an adhesive. Colors available are aqua, ivory, black, bisque, peach and dubonnet. Resilient Tile Floors Dept., Armstrong Cork Co., Lancaster, Penn.

FUEL TANK FOR HEATER

When a large-capacity fuel tank is unavailable, the recently announced line of *Duo-Therm* water heaters can be placed in prompt service through use of a 5-gal. fuel-oil tank, designed to be attached directly to the side of the water heater by a simple operation. Tank is styled in white enamel to harmonize with the heater. Duo-Therm Division, Motor Wheel Corp., Lansing, Mich.

for Every Architect



THE SPENCER DATA BOOK

The return of building activities calls for complete data on Spencer Vacuum Cleaning in your files. See what Spencer is doing in 50,000 schools, theatres, hotels, industrial and commercial buildings.

CHECK THE SECTIONS YOU WANT

No. 131—General Information
No. 133—Producers and Separators
No. 125—Industrial Vacuum Cleaning
No. 116—Piping and Valves
No. 115—Tools and Hose
No. 136—Specifications
No. 137—Boiler cleaning, central
No. 117—Furnace cleaning, portable
No. 138—Dry mop cleaning
No. 139—Swimming pool cleaning

SPENCER HARTFORD VACUUM CLEANING
THE SPENCER TURBINE COMPANY, HARTFORD 6, CONN.
307A

PAINT BRUSH CLEANER

To increase the "yardage" performance of paint brushes, *Brush Shampoo* has been announced as a cleaner which is efficient for removing hardened paint, lacquer, varnish, shellac, or enamel, right down to the heel of the brush. It is said to be harmless to hands, and will not injure hog bristle or nylon, nor the setting compound. Brushes cleaned in this way can be rinsed under faucet without staining sink or wash basin. Cleaner can be used full strength for fastest results, or diluted with water. Devoe & Raynolds Co., Inc., 44th St. & First Ave., New York 17, N. Y.

FLUORESCENT TROFFERS

Special knock-outs in the ends of recessed fluorescent troffers are reported to make possible their use in accurate 48-in. lengths, requiring no more ceiling length than that of the 48-in. fluorescent lamps and their lampholders. The troffers are built as complete units with quick-mounting brackets, ready for installation. Interchangeable accessories include baffles, two types of egg-crate louvers, and both flat and formed glass panels. A choice of two reflector surfaces is offered; all troffers have 300° white reflectors; and Alzak reflectors may be had with special Alzak reflector liners. Troffers are available in two types; deep type for one, two, or three 40-watt lamps, and shallow type for one or two 40-watt lamps. Both types are supplied with flange or T-bar mounting edges. Edwin F. Guth Co., 2615 Washington Blvd., St. Louis 3, Mo.

DAMPER CONTROL

Automatic damper control is brought to coal- or wood-fired stoves, ranges, and some types of furnaces by *Thermodraft*, which opens and checks draft thermostatically. It is installed in chimney pipe, either horizontally or vertically, fitting tightly between two of its sections, and requiring no electrical or other connections. Sizes are for 6-in., 7-in., and 8-in. flue pipes. Thermostatic control should offer many advantages: greater comfort through elimination of periods of overheating and cooling, low overnight temperature with assurance that fire won't die for want of draft, removal of fire hazard from overheated flues, and conservation of fuel. No-No Specialty Co., Quincy Ave. at East 69th St., Cleveland 4, Ohio.

WATERPROOFING

Inquiries regarding *Aquella* waterproofing compound (ARCHITECTURAL RECORD, Sept., 1946, p. 136) should be sent to Prima Products, Inc., 10 East 40th St., New York 16, N. Y., rather than to Aquella Products, Inc., Richmond Hill, N. Y., as announced.

Sanymetal Century Type Ceiling Hung Toilet Compartments are particularly appropriate for schools. They impart dignity, refinement, and cheerfulness to the toilet room environment.

Sanymetal*

*Trade Mark Reg. U. S. Pat. Off.

"PORCENA"

(Porcelain on Steel)

TOILET COMPARTMENTS AND SHOWER STALLS

EXPEDIENCY USUALLY RESULTS IN PREMATURE OBSOLESCENCE OF BUILDING ENVIRONMENTS

● Avoiding premature obsolescence in toilet room environments does not depend on chance. It is the toilet room environment that impresses people either favorably or adversely concerning the convenience and modernity of a building. Toilet compartments usually dominate a toilet room, give character to the toilet room environment, and emphasize the convenience of the plumbing fixtures.

Expediency sometimes suggests the use of ordinary toilet compartments. Due to the development of new types of building products, the urge to satisfy expediency should be resisted because the installation of a product merely on the basis of its availability may result in premature and costly obsolescence. There is no greater assurance against premature obsolescence in the toilet room environment than Sanymetal "PORCENA" (Porcelain on Steel) Toilet Compartments. Resist the influence of expediency that would urge the acceptance of a substitute.

Sanymetal "PORCENA" Toilet Compartments are made in types suitable for toilet room environments in every type of building. They provide the utmost sanitation. "PORCENA" (porcelain on steel) is a material that provides the correct combination of the hardness of glass with the inherent structural strength of steel—a material which presents no vulnerable points of deterioration. Sanymetal "PORCENA" Toilet Compartments are made in a wide range of never-fade colors imbedded deep into a glass-smooth, flint-hard, non-porous surface that is moisture and rust-proof, does not absorb odors, and is impervious to ordinary acids, oils and grease. The brilliance of the glass-smooth surface can be maintained by wiping clean with a damp cloth. Sanymetal "PORCENA" Toilet Compartments embody the results of over 32 years of specialized skill and experience in making over 70,000 toilet installations.

Ask the Sanymetal Representative in your vicinity ("Partitions" in phone book) for helpful suggestions on planning modern toilet room environments to avoid premature obsolescence. Refer to Sanymetal Catalog 19-B5 in Sweet's Architectural File for 1946 or write for file copy of Catalog 84.

THE SANYMETAL PRODUCTS COMPANY, INC.

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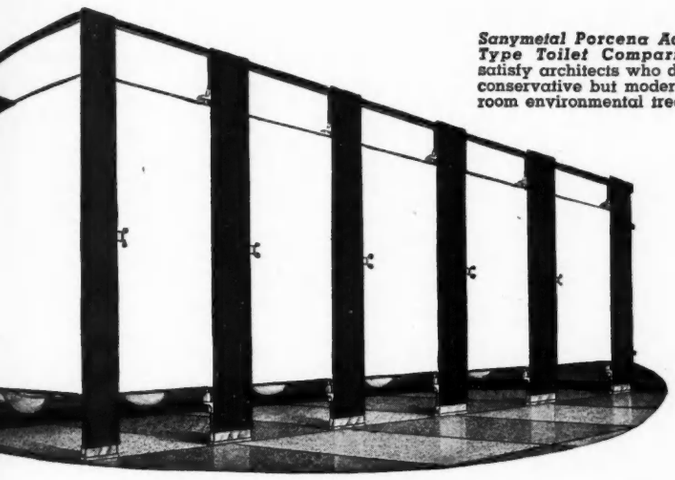
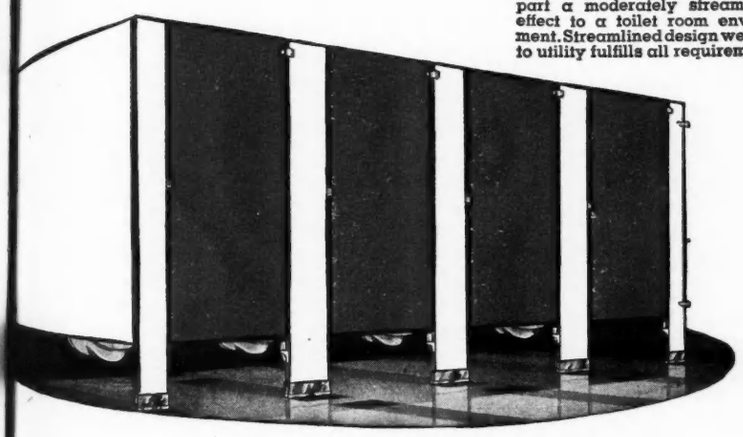
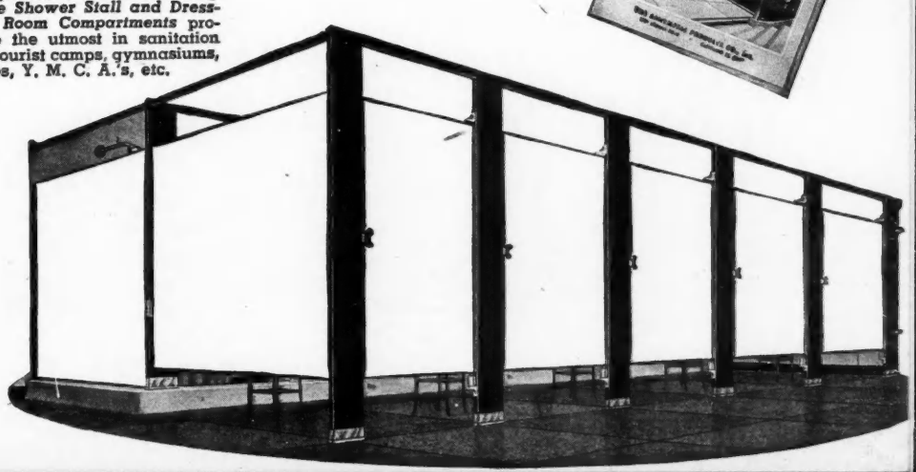


Sanymetal Porcena Academy Type Toilet Compartments satisfy architects who desire a conservative but modern toilet room environmental treatment.



Sanymetal Porcena Normandie Type Toilet Compartments impart a moderately streamlined effect to a toilet room environment. Streamlined design wedded to utility fulfills all requirements.

Sanymetal Catalog 84 illustrates several typical toilet room environments.



Sanymetal Porcena Academy Type Shower Stall and Dressing Room Compartments provide the utmost in sanitation for tourist camps, gymnasiums, clubs, Y. M. C. A.'s, etc.

Sanymetal*

*Trade Mark Reg. U. S. Pat. Off.

TOILET COMPARTMENTS, SHOWER STALLS AND DRESSING ROOMS

priced out before it gets there with the 'goods.' "

Upward pressure on construction costs would be eased if there were a better balance in the emergency housing program, Thomas S. Holden, president of the F. W. Dodge Corporation, suggested. "For this reason, among others, more apartment buildings of both city and suburban types are urgently needed. The average apartment suite is apt to require smaller quantities of critical materials than does the average single-family house; it also requires less of certain materials like lumber whose price increases have been proportionally much greater than others. Speeding up of apartment buildings would spread the strain on material markets, spread employment among building trades not used for house building, and better serve the immediate needs of thousands of veterans."

The value of new construction this year is expected to total about $9.2 billion, of which about $3 billion will be spent on permanent-type non-farming housing, said Wilson Wright, economist of the Armstrong Cork Co., and chairman of the Council's Market Analysis Committee. "Construction expenditures are expected to rise to about $11.7 billion in 1947," he predicted, "and to average about $14.6 billion in 1948 and 1949." Of this total, the volume of new housing is expected to reach $5 billion in 1947 and average $5.7 billion in the next two years, permitting construction of 252,000 new permanent-type dwelling units this year, 820,000 in 1947, and 970,000 on the average in 1948–49.

A full 90 per cent of the increased cost of building is attributable to labor and the government, A.I.A. president James R. Edmunds, Jr., told the meeting. "The government has contributed to our higher costs through higher taxes and inept efforts to control the economy and the construction industry which have reduced materials production and encouraged work stoppages," Mr. Edmunds said. "Labor has contributed the greater share of the increased cost through higher wage levels all along the line, through its own reduced productivity, and through strikes in the building industry and in related industries. . . . No one in the building industry contends, however, that opportunities to reduce building costs are confined to the field of labor. There is much that all of us can do."

Arthur A. Hood, co-chairman of the Council's Manufacturer-Dealer Coordinating Committee, offered one solution to the housing shortage. He advocated a plan to enlist dealer cooperation in the promotion and production of the greatest possible number of homes in the immediate future. Believing that by standardization of plan building costs can be reduced to the required level, Mr. Hood said that architect Randolph Evans has produced three designs for small houses suitable for the various sections of the country. A million of these, it is proposed, could be built through dealers' cooperation, using standardized, mass-produced parts.

Several achitects were among the 14 men honored by the Council for their contribution to the advancement of dimensional coordination of building materials-and equipment: Prentice Bradley, architect of the Modular Service Association; Theodore Irving Coe, technical secretary of the A.I.A.; Max H. Foley; Frederick G. Frost, Sr.; and A. Gordon Lorimer, chief architect, Department of Public Works of New York City.

SULLIVAN HONORED

On September 3, the 90th anniversary of the birth of Louis Henri Sullivan, a bronze tablet marking his birthplace, 42 S. Bennett St., Boston, was unveiled

(*Continued on page 140*)

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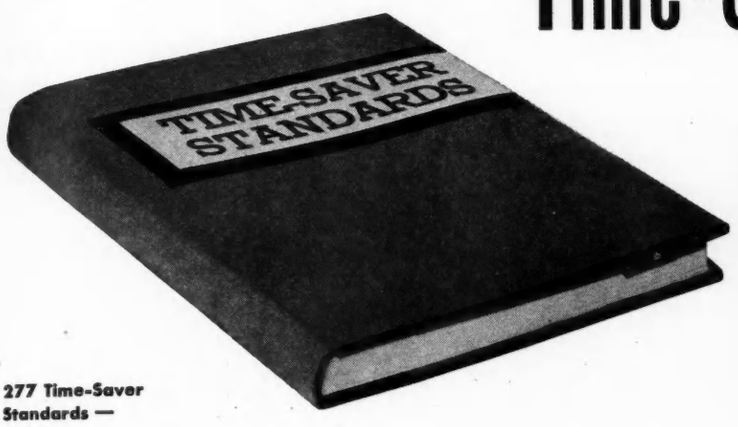

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Heating — Unit Heaters. Typical Heat sources. Boiler capacity. Characteristics. Location. Selection data. Capacities. Controls. Fresh Air connections. Pipe connections. Louvres. Grilles. Deflectors.

Basement Waterproofing. Impermeability of concrete cracks and joints in masonry. Hydrostatic pressure. Recommended concrete mixtures. Effect of curing time on permeability. Integral and membrane methods. Plastic and iron coating. Cement-base coatings.

Folding Partitions. Center hung doors. Pair-operated doors. Pockets. Passage through closed partitions. Door construction and soundproofing. Rolling partitions. Folding fabric partition.

Lighting. Recommended levels of illumination. Fixtures for filament and mercury lamps. Luminaire spacing. Room index. Coefficients of illumination. Layout suggestions. Conformity with structural design. Computed values of illumination. Lumen output of lamps.

Noise Reduction Acoustical Materials. A rule-of-thumb answer to what noise coefficient to use. Special applications. Materials for plastic application. Costs. Appearance. Design. Fire resistance. Light reflection. Heat transmission. Lighting. Pre-cast materials. Effect of paint. Acoustical Units: Wood framing; metal suspension systems.

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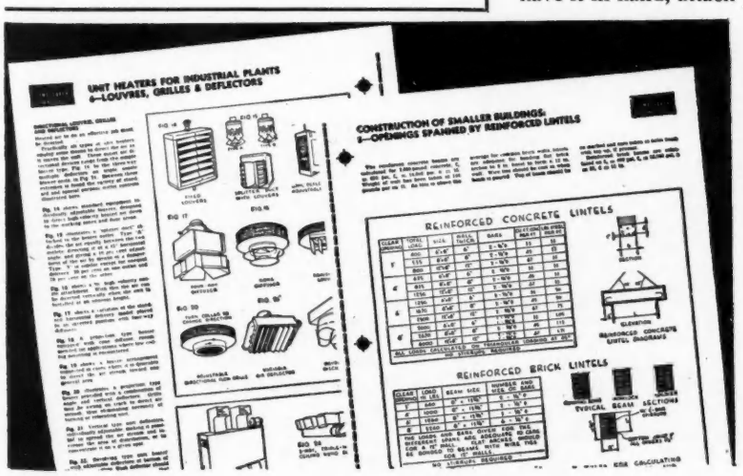
All you have to do is to fill in the accompanying coupon, now, while you have it in hand, attach your check for $9.50, and mail it today.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by the Boston Society of Architects and the Massachusetts State Association of Architects. James R. Edmunds, Jr., president of the A.I.A., presided at the unveiling ceremonies.

The plaque, designed by Richard Shaw, bears the inscription: "Birthplace of Louis Henri Sullivan, 1856-1924, Architect and Author whose stalwart and vital achievements mark the beginning of an independent architecture consistent with the normal creative spirit of man and the free aspirations of the people of America."

A Commemorative Dinner at the Boston Architectural Center followed the unveiling ceremonies.

ARCHITECTS UNITE

In order better to unify their efforts, the Southern Illinois, Central Illinois and Chicago chapters of the A.I.A. have formed the Illinois Architects Association. Officers elected at the first meeting of the new group in September are: *president*, C. Herrick Hammond, Chicago; *vice-president*, S. T. Pabst, East St. Louis; *secretary-treasurer*, Earl C. Worthington, Springfield.

RICHMOND SHREVE

Richmond Harold Shreve, New York architect and senior member of the firm of Shreve, Lamb & Harmon, designers of the Empire State Building, died on September 10 at the age of 69.

Widely known throughout the country, Mr. Shreve, as director of the Slum Clearance Committee of New York organized the data upon which districts for slum clearance were determined. He was also chief architect for the Williamsburg Housing Project, the first of the New York Housing Authority's large slum-clearance developments.

A native of Nova Scotia, Mr. Shreve was a graduate of the College of Architecture of Cornell University, a Fellow of the American Institute of Architects of which he was president in 1941–43, and a member of the Royal Institute of British Architects. He served as president of the New York Building Congress from 1927 to 1929.

CLAUDE F. BRAGDON

Claude Fayette Bragdon, author and architect, died suddenly on September 17 at the age of 80.

A practicing architect in Rochester, N. Y., from 1901 to 1923, Mr. Bragdon was well known for his designs of railroad stations throughout the United States and Canada. In 1923 he became associated with Walter Hampden, actor, for whom he designed stage sets for a number of years. He was formerly lecturer on architecture at the Art Institute of Chicago and in 1934 was appointed special lecturer on the same subject at Princeton University.

ON THE CALENDAR

November 11–14: 31st National Hotel Exposition, Grand Central Palace, New York City.

November 11–16: 39th Annual Convention, National Association of Real Estate Boards, Atlantic City, N. J.

November 17–22: 27th Annual Meeting, American Welding Society, Hotel Ambassador, Atlantic City, N. J.

November 18–22: 28th Annual National Metal Congress and Exposition, Municipal Auditorium, Atlantic City, N. J.

December 2–7: 17th National Exposition of Power and Mechanical Engineering, Grand Central Palace, New York City.

January 4, 1947: Meeting, North American Conference on Church Archi-

(*Continued on page 142*)

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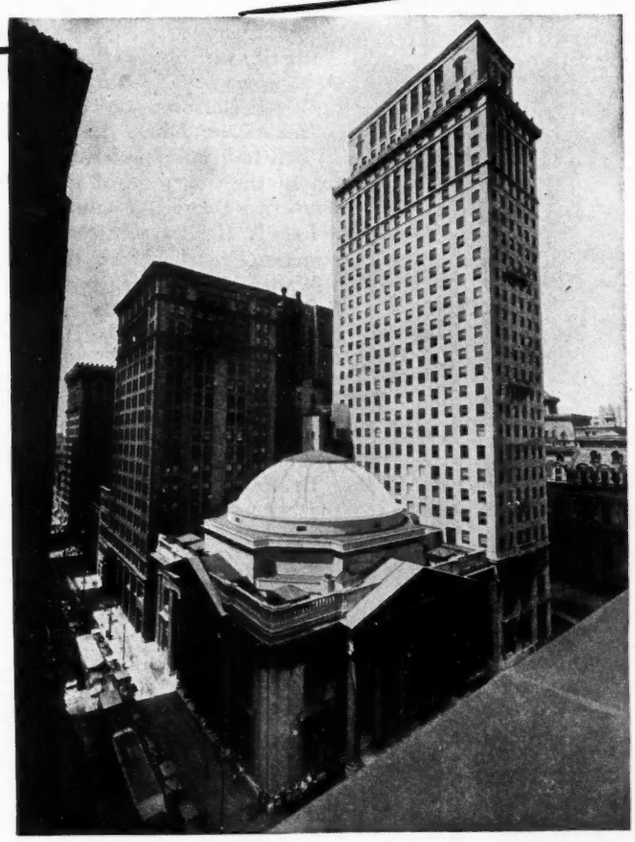
Home of Girard Trust Carries on Fine Tradition



GIRARD TRUST COMPANY GROUP OF BUILDINGS, PHILA., PA. Left to right: Morris Building, Girard Trust Co. Building, Girard Trust Office Bldg.

One of the first trust companies in America, organized in 1836 and never merged with any other bank, is the Girard Trust Company.

Carefully conservative in the Girard tradition is the management of the three Girard Trust properties in downtown Philadelphia. Their use of Webster Steam Heating Equipment, goes back to 1910... has kept these properties at the peak in comfort and economy in heating. The 28-story Girard Trust Office Building, the 18-story Morris Building, and the picturesque domed Girard Trust Company Building are today heated from one central boiler plant, with most of the installation enjoying the "controlled-by-the-weather" comfort of a Webster Moderator System.

In 1910, the first installation of Webster Heating Equipment was made in the Morris Building, when the engineering firm of Francis Brothers & Jellett, Inc. (now Stewart A. Jellett Co.) handled the installation of a "Webster System of Steam Circulation and Apparatus."

The Girard Trust Company Building has used Webster Heating Equipment since 1922, when Webster Traps were installed on direct radiation and on vento coils by W. G. Cornell Co., heating contractor.

In 1931, the 28-story Girard Trust Office Building was built and equipped with the Webster Sylphon Traps and Type W Valves. William H. Walters & Sons, Philadelphia, were the heating contractors and Tenney & Ohmes, Inc., New York, consulting engineers.

Webster Heating Equipment has been purchased at intervals for 35 years as made necessary by the changing requirements of these three buildings. Most recent improvement was the selection of a Webster Electronic Moderator System as part of a modernization program begun in 1945 involving a tailor-made orificing job—equipping 734 Radiator Supply Valves with properly sized Webster Metering Orifices. William H. Walters & Sons were the contractors and Moody & Hutchison, Philadelphia, consulting engineers.

Karl Rugart, Philadelphia Representative with Webster for 29 years, has worked closely with the operating personnel of the Girard properties to assure heating comfort, economy and ease of operation. Clarence Morris is Operating Engineer. Warren Moore is Superintendent. S. H. Bigler is Building Manager.

We are ready to work with you as we have worked with the Girard Trust Company.

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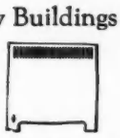
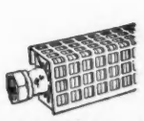


1946 Webster System Radiation—concealed convectors made of copper tubing and aluminum fins, with *integral* Webster Traps and Valves.



New! Webster Type WI Radiation for installation where floor or wall space is limited.

tecture (architects interested in church work, denominational church building board executives, editors, clergymen, craftsmen and any others interested), New York City. For information address Director, Interdenominational Bureau of Architecture, 297 Fourth Ave., New York 10, N. Y.

January 23–26: 2nd Conference and Exhibit, Low-Pressure Division, The Society of the Plastics Industry, Edgewater Beach Hotel, Chicago.

January 27–30: 28th Annual Convention, The Associated General Contractors of America, Inc., Stevens Hotel, Chicago.

January 27–31: 7th International Heating and Ventilating Exposition, Lakeside Hall, Cleveland, Ohio.

January 27–31: Electrical Engineering Exposition, and Winter Convention, American Institute of Electrical Engineers, 71st Regiment Armory, New York City.

January 28–February 2: 3rd Annual Plastics Show and Convention, The Society of Plastics Engineers, Navy Pier and Congress Hotel, Chicago.

May 5–11: 2nd National Plastics Exposition and Annual Convention, The Society of the Plastics Industry, Coliseum, Chicago.

APPOINTMENTS

The following appointments have been announced:

Ira J. Bach, executive director of the newly organized Cook County Housing Authority with offices at 203 N. Wabash Ave., Chicago.

Leland Barrows, special assistant to Commissioner Dillon S. Myer of the FPHA, to handle special problems arising in the execution of the veterans' temporary emergency housing program.

Ross A. Gridley, director of the Construction Branch of the NHA.

Walter Measday, regional director in Los Angeles, heading the new regional headquarters office of the U. S. Department of Commerce.

Douglas P. Maier, former captain in the U. S. Army Intelligence Service, associate professor of architectural design at Western Reserve University.

Dr. Frank Roos, recently professor of the history of art at Ohio State University, professor and head of the department of art at the University of Illinois; he succeeds Professor James VanDerpool, now with Columbia.

OFFICE NOTES

Offices Opened, Reopened

Wallace G. Atkinson has reopened his office for the practice of landscape architecture and site planning engineering at 520 N. Michigan Ave., Chicago 11, Ill.

Harry Barrett, A.I.A., has announced his return to private practice with offices at 1309 14th St., N.W., Washington 5, D. C., following almost five years as staff architect in Washington to the British Government.

Jules P. Channing has established a consulting engineer office for the general practice of civil engineering at 1540 Washington Ave., Miami Beach, Fla.

William F. Deknatel, Architect, has reopened his office at 25 E. Jackson Blvd., Chicago 4, Ill.

Arthur Fehr and Charles Granger, both A.I.A., have reopened their office for the practice of architecture and urban planning at 502 E. Fifth St., Austin, Texas.

Charles Dana Loomis, A.I.A., formerly technical director of the Housing Authority of Baltimore City, has resumed the private practice of architecture at 22 E. 25th St., Baltimore 18, Md.

Lloyd E. Mellor, Architect, recently separated from the Army Air Forces as

(*Continued on page 144*)

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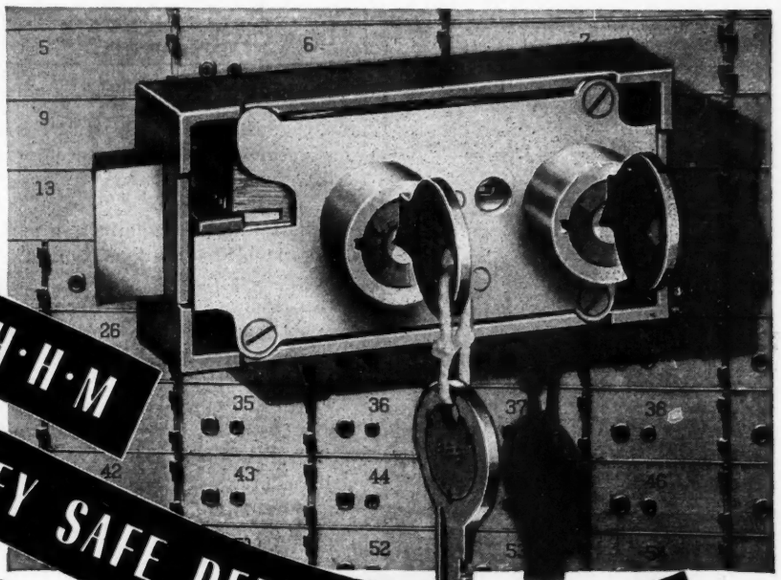

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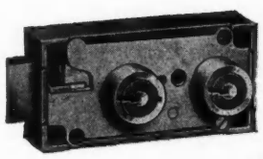

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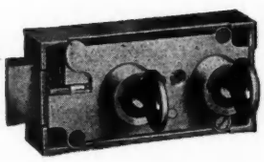

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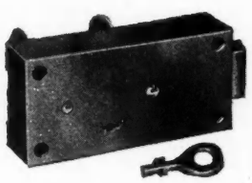

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❶ *SIMPLICITY OF CONSTRUCTION:* Has fewer parts than any other changeable key safe deposit box lock ever made—assuring, over an indefinite period of years, the utmost in convenience and dependability.

❷ *SEALED KEY FEATURE PROTECTS THE BANK:* The customer selects the sealed envelope containing his keys and signs for them in the presence of the vault manager. The bank has no duplicate, nor record of these keys. The customer is solely responsible for them.

❸ *FOOL-PROOF, TAMPER-PROOF DEPOSIT BOX CONTROL:* Bank's guard-key controls insertion and removal of customers' key. All operations of lock must be made under direct supervision of guard.

❹ *THOUSANDS OF CHANGES PERMISSIBLE:* By the simple device of inserting change key into rear of lock, the lock may be reset thousands of times—so that box may be rented, released, re-rented without interruption or confusion.

❺ *EMPTY BOX KEY SIMPLIFIES CONTROL:* This key gives bank control of each box until it is rented, and between rentals. When any rental is discontinued, bank returns old customer's keys to H-H-M for resealing, and sets the lock for empty box key until box is re-rented and the lock re-set for the new customer's sealed keys.

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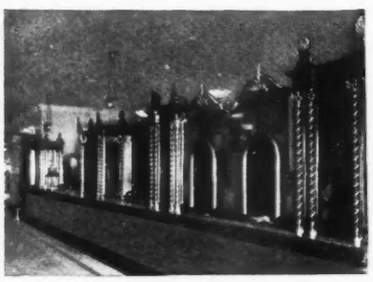

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CINCINNATI 3, OHIO

THE RECORD REPORTS

(*Continued from page 142*)

Lt. Col. after four years of active duty, has resumed his architectural practice with offices at 101 Park Ave., New York 17, N.Y.

Charles Melov, Architect, has opened offices at 439 Sevilla Ave., Coral Gables, Fla.

K. Roderick O'Neal, Architect, has opened an office for the practice of architecture at 111 W. Jackson Blvd., Chicago 4, Ill.

Ivan M. Reynolds and Ross W. Morrison, Associated Architects, have announced the opening of an office for the general practice of architecture at 740 Hightower Bldg., Oklahoma City, Okla.

Milton Sherman, Architect, has reopened his office at 2 Park Ave., New York, N.Y.

New Addresses

The following new addresses have been announced:

Fred Barlow, Jr., Landscape Architect and Planning Consultant, 3444 W. First St., Los Angeles 4, Calif.

Ralph E. Bennett & Associates, Sales Engineers and Building Products, 1709 W. 8th St., Los Angeles 14, Calif.

Davis & Roberts, Architects (Virgel A. Davis and Harris H. Roberts), 206 Medical Arts Bldg., Waco, Texas.

Paul W. Drake, A.I.A., 100 Summit Ave., Summit, N. J.

Home Owners Guild, 5444 Calumet Ave., Hammond, Ind.

Moore & Hutchins, Architects, 2 W. 20th St., New York 11, N. Y.

Peck & Harvey, 5736–38 N. Western Ave., Chicago 45, Ill.

Peddle, Thorp & Walker, Architects, Bank of New South Wales Bldg., 341 George St., Sydney, Australia.

Louis Warren Ross, Architect, 131 State St., Boston 9, Mass.

Elmer S. Tuthill, Architect and Engineer, 100 Summit Ave., Summit, N. J.

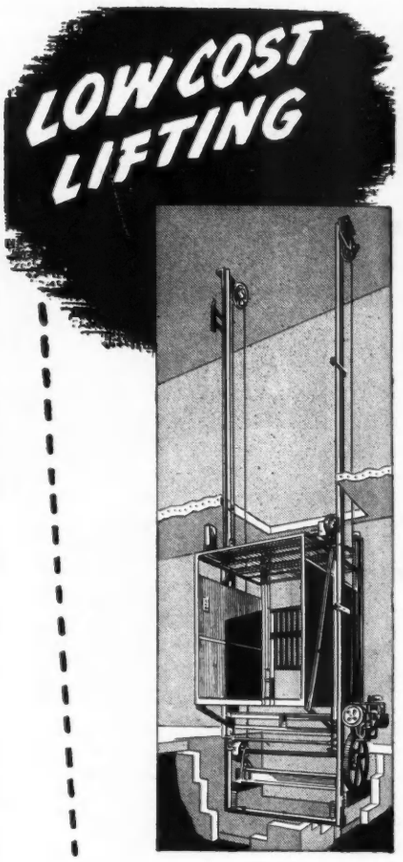
Firm Changes

Clepper & Clepper, Architects, have announced that Walter H. Mallorie, architect, has been taken into partnership and the name of the firm changed to Clepper & Mallorie, Registered Architects. Address, 72 Vine Ave., Sharon, Penn.

The William L. Crow Construction Co. has announced the appointment of Richard T. Geoghegan as a member of their organization. During the war Mr. Geoghegan served with the Corps of Engineers in the Philippine Islands, Japan and Iran.

Henry Dreyfuss has announced the addition to his industrial design staff of Edward L. Barnes, architect, to head the organization's West Coast office in

(*Continued on page 146*)



with countless applications

Where service requirements do not warrant expensive elevator installation and the travel limit is within 25 feet, this Montgomery Self-Contained Electric Elevator simplifies many lifting problems. Just a few of its many uses —combination passenger-freight service for 2- or 3-story industrial buildings, furniture stores, funeral homes, utility sections of hospitals, etc.

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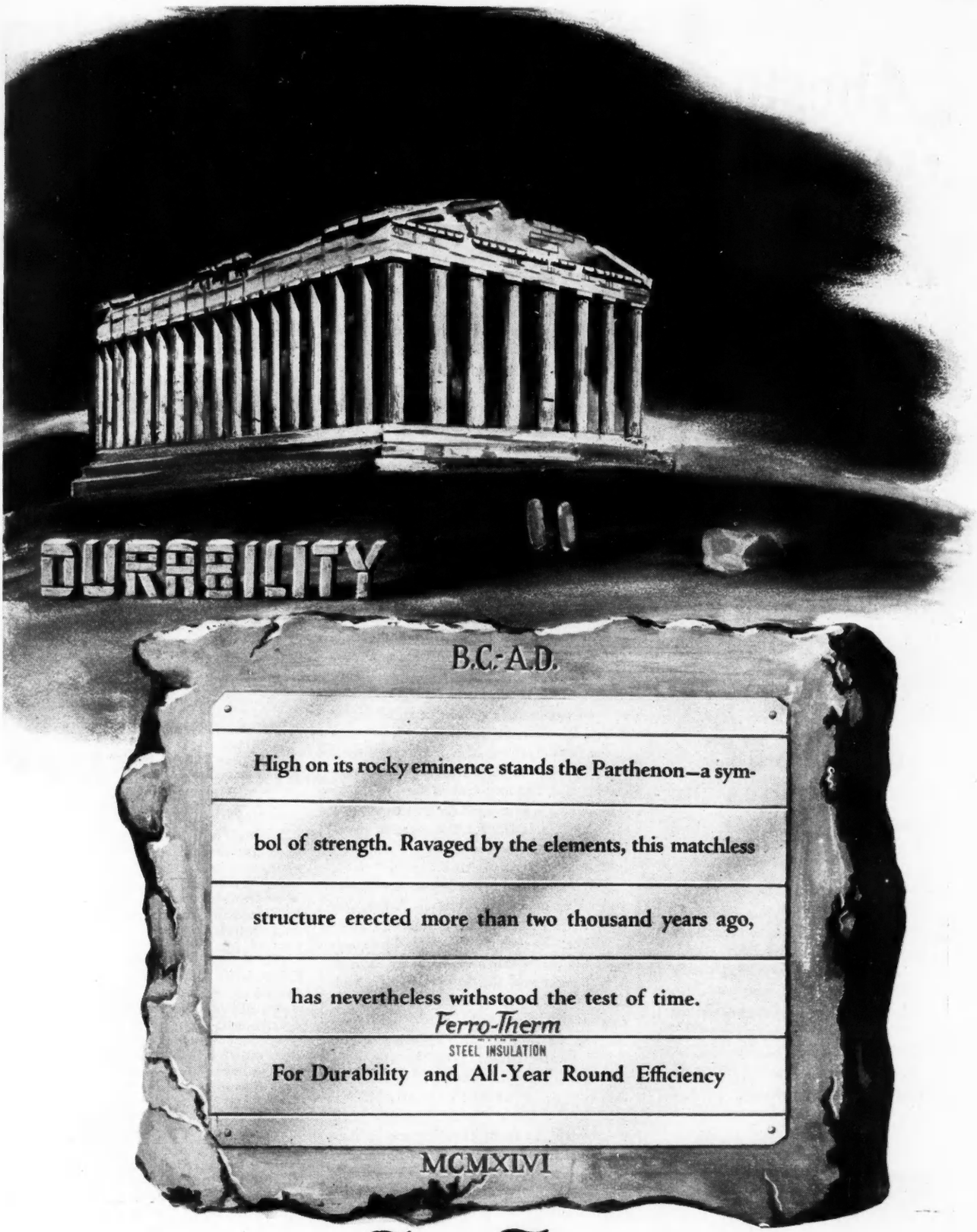
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High on its rocky eminence stands the Parthenon—a sym-
bol of strength. Ravaged by the elements, this matchless
structure erected more than two thousand years ago,
has nevertheless withstood the test of time.
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plus TIME-SAVING EFFICIENCY

KINNEAR Rolling Doors present a flexible, armored barrier against weather, wear, and fire, absorb shocks and blows, and withstand many years of everyday use. They combine rugged, resilient strength with smooth, quick operation in an all-steel, interlocking-slat curtain that *coils upward* into a compact roll above the lintel. By rising vertically out of the way, KINNEAR Rolling Doors save vitally needed space and clear the way for plant traffic and other activity.

Time-and-labor-saving advantages of these doors reach a new high with the addition of KINNEAR Motor Operators and push-button remote controls. This extra convenience encourages prompt door closure and cuts heating and air-conditioning costs.

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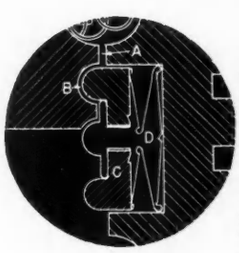
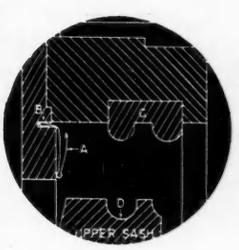
The original Silentite, introduced by Curtis in 1932, was considered the most weather-tight window on the market. Now, the new SELF-FITTING Silentite is *20% more weather-tight!* To provide such amazing fuel-saving advantages, Curtis engineers employed an entirely new, entirely different type of weather-stripping—a basic improvement in window design. Here is the inside story—



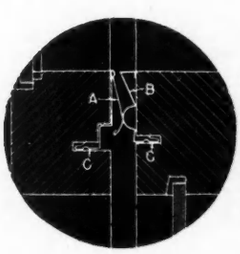
SIDE WEATHER-STRIPPING

Clearance between jamb and sash, (A), is normally ⅛". This greater clearance is made possible by the flexibility of the new combined sliding bar and weather strip (C) and (D). The two beaded pine members of the sliding bar are flexibly connected by a spring bronze member which replaces the parting stop. The double Z type bronze weather-strip exerts outward pressure on sliding bars, keeping each in firm contact with its sash, (B), regardless of position of sash.



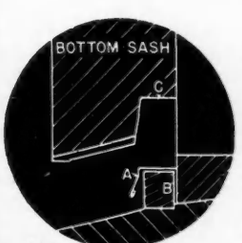
HEAD WEATHER-STRIPPING

Groove at (B) in the head jamb takes the flange of the bronze spring leaf weather-strip (A). This spring leaf is compressed by the top rail when sash is closed. The joint is further sealed by the pine head stop (C), the bead of which engages a corresponding groove (D), in the top edge of the top rail. The outside edge of the top rail is beveled to make an easy sliding contact with the spring leaf, gradually compressing it to a tight fit.



WEATHER-STRIPPING AT MEETING RAILS

The check rail has been discarded in favor of a plain meeting rail and the wood parting stop has been eliminated. The weather-strip members, (A) on the top and (B) on the bottom sash, are installed at the factory. As shown in the detail, the sash are separated so that the weather-strips are not compressed. Note in side weather-strip that the parting stop is replaced by connecting member of the sliding bar.



SILL WEATHER-STRIPPING

At the sill, a further decided improvement has been made in the weather-tightness. A rabbet, (C), beveled on the side, is provided on the inside edge of the bottom rail and stiles. A pine sill strip, (B), supports special weather-strip, (A), with a spring leaf which is compressed by the beveled edge of the rabbet as the sash is closed. The weather-strip is applied to the sill strip and the assembly applied to the sill at the factory.

OTHER IMPORTANT SILENTITE FEATURES

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- Easier operation—no sticking, no binding
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- No weights, cords or pulleys
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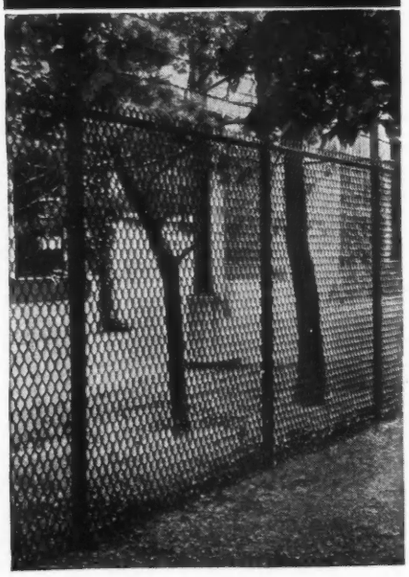

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ARCHITECTURAL ENGINEERING

TECHNICAL NEWS AND RESEARCH

(*Continued from page 130*)

WATER SUPPLY

Water Supply and Booster Systems for Buildings (Bulletin 1500). Complete data on determining head and capacity requirements, selecting the proper system and pumping equipment, typical piping and pump installations, approximate dimensions for layout purposes. 16 pp., illus. Yeomans Bros. Co., 1418 N. Dayton St., Chicago 22, Ill.*

WINDOWS

H & R Aristocrat Steel Basement Windows. Bulletin describing and giving complete specifications and price data on three sizes of steel windows. Diagrams features such as positive locking handle, interchangeability, easy removal. 2 pp., illus. H & R Machine and Tool Co., 20080 St. Clair Ave., Cleveland 19, Ohio.

Hope's Steel Windows and Biltin Sub-Frames in Glass Block. Diagrams and description of a line of steel windows and sub-frames prepared for installation in glass block panels at the time that the glass blocks are laid up. Bulletin illustrates all five types, gives full construction and installation detail, dimensions, finish. 4 pp., illus. Hope's Windows Inc., Jamestown, N. Y.*

LITERATURE REQUESTED

The following individuals and firms request manufacturers' literature:

R. E. Earnheart, Architect, 1810 Walker Ave., Kansas City, Mo.

W. H. Grant, Jr., Architect, 207 Waverly Way, Clarksburg, W. Va.

Christopher P. Kantianis, Architect, Springfield Natl. Bank Bldg., Springfield, Mass.

Sr. Aquiles Landoff, Arquitecto, Casilla 119, Vina del Mar, Chile.

Charles Melov, Architect, 439 Sevilla Ave., Coral Gables, Fla.

Modas a Exposicao-Clipper S/A, 39 Largo Santa Cecilia, Sao Paulo, Brazil.

Reynolds and Morrison, Associated Architects, Hightower Bldg., Oklahoma City 2, Okla.

School of Architecture, The University of Oklahoma, Norman, Okla.

Sherwood, Mills & Smith, Architects, 101 Park Ave., New York 17, N. Y.

Timber Structures, Inc., P.O. Box 3782, N.W. 29th & N.W. Yeon Ave., Portland 8, Ore., Attention Light Structures Division.

Macon G. Williams, Chief, Design Branch, Air Installations Division, Headquarters, Air Materiel Command, Wright Field, Dayton, Ohio.

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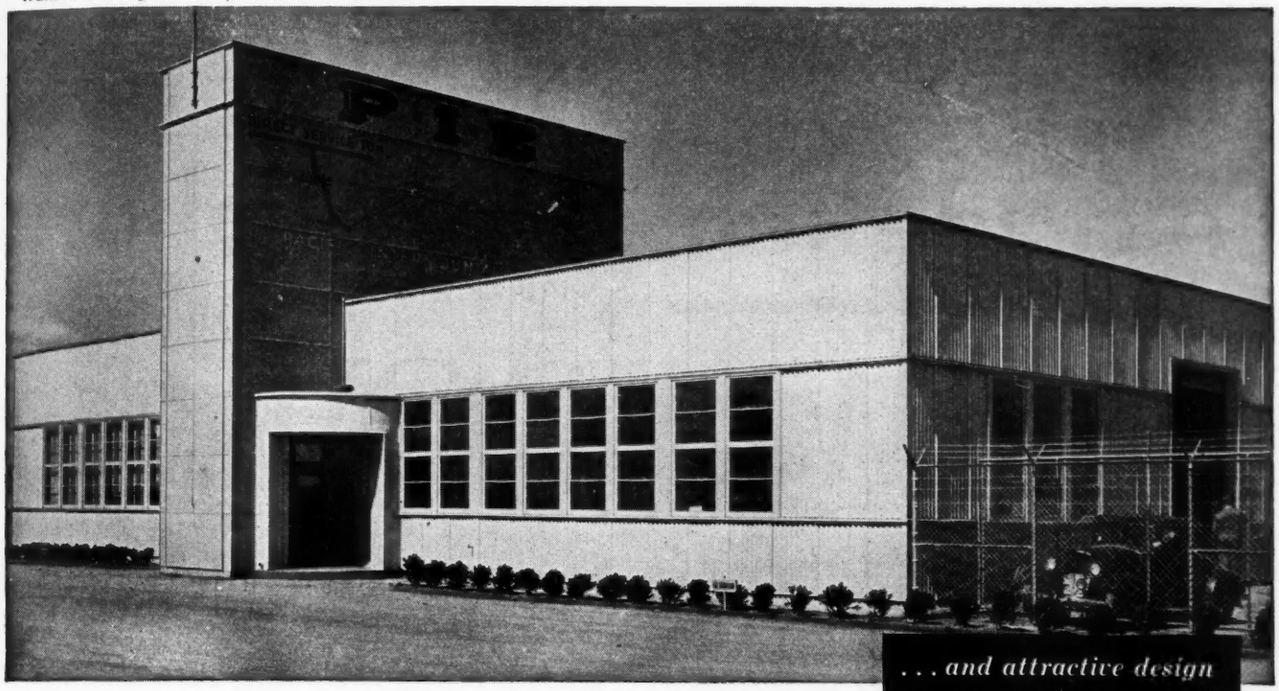
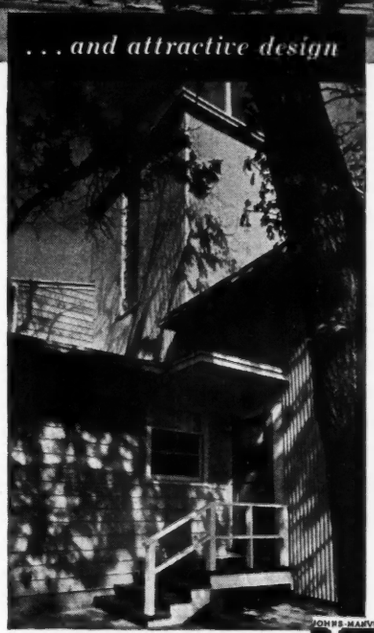


. . . and attractive design



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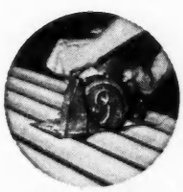

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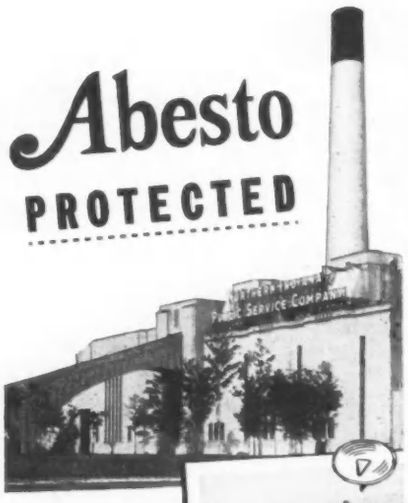

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No small maintenance job! More than 70,000 square feet of roof on this generating plant, one of many big structures protected and maintained with

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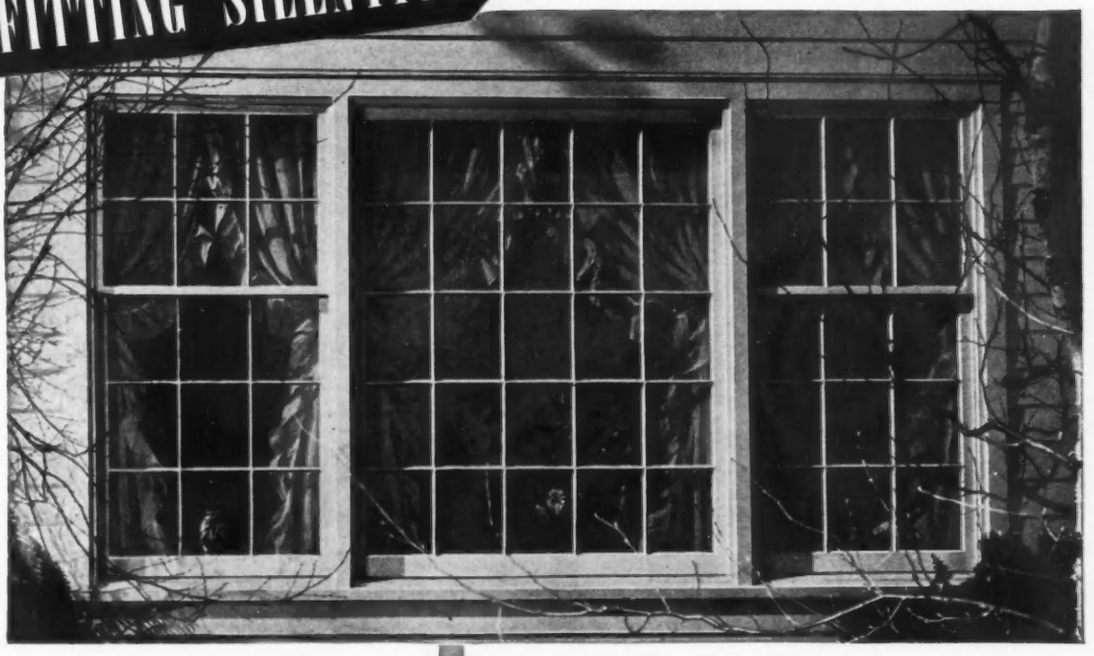
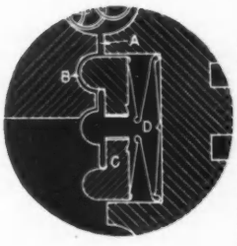
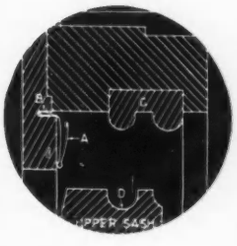
The original Silentite, introduced by Curtis in 1932, was considered the most weather-tight window on the market. Now, the new SELF-FITTING Silentite is *20% more weather-tight!* To provide such amazing fuel-saving advantages, Curtis engineers employed an entirely new, entirely different type of weather-stripping—a basic improvement in window design. Here is the inside story—





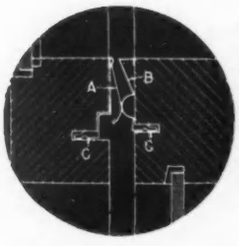
SIDE WEATHER-STRIPPING

Clearance between jamb and sash, (A), is normally ⅛". This greater clearance is made possible by the flexibility of the new combined sliding bar and weather strip (C) and (D). The two beaded pine members of the sliding bar are flexibly connected by a spring bronze member which replaces the parting stop. The double Z type bronze weather-strip exerts outward pressure on sliding bars, keeping each in firm contact with its sash, (B), regardless of position of sash.



HEAD WEATHER-STRIPPING

Groove at (B) in the head jamb takes the flange of the bronze spring leaf weather-strip (A). This spring leaf is compressed by the top rail when sash is closed. The joint is further sealed by the pine head stop (C), the bead of which engages a corresponding groove (D), in the top edge of the top rail. The outside edge of the top rail is beveled to make an easy sliding contact with the spring leaf, gradually compressing it to a tight fit.



WEATHER-STRIPPING AT MEETING RAILS

The check rail has been discarded in favor of a plain meeting rail and the wood parting stop has been eliminated. The weather-strip members, (A) on the top and (B) on the bottom sash, are installed at the factory. As shown in the detail, the sash are separated so that the weather-strips are not compressed. Note in side weather-strip that the parting stop is replaced by connecting member of the sliding bar.

SILL WEATHER-STRIPPING

At the sill, a further decided improvement has been made in the weather-tightness. A rabbet, (C), beveled on the side, is provided on the inside edge of the bottom rail and stiles. A pine sill strip, (B), supports special weather-strip, (A), with a spring leaf which is compressed by the beveled edge of the rabbet as the sash is closed. The weather-strip is applied to the sill strip and the assembly applied to the sill at the factory..

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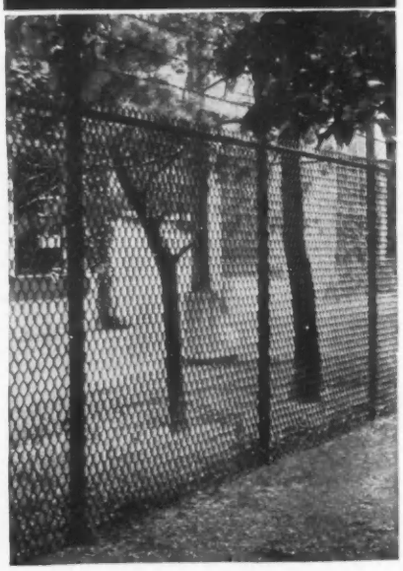

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(*Continued from page 130*)

WATER SUPPLY

Water Supply and Booster Systems for Buildings (Bulletin 1500). Complete data on determining head and capacity requirements, selecting the proper system and pumping equipment, typical piping and pump installations, approximate dimensions for layout purposes. 16 pp., illus. Yeomans Bros. Co., 1418 N. Dayton St., Chicago 22, Ill.*

WINDOWS

H & R Aristocrat Steel Basement Windows. Bulletin describing and giving complete specifications and price data on three sizes of steel windows. Diagrams features such as positive locking handle, interchangeability, easy removal. 2 pp., illus. H & R Machine and Tool Co., 20080 St. Clair Ave., Cleveland 19, Ohio.

Hope's Steel Windows and Biltin Sub-Frames in Glass Block. Diagrams and description of a line of steel windows and sub-frames prepared for installation in glass block panels at the time that the glass blocks are laid up. Bulletin illustrates all five types, gives full construction and installation detail, dimensions, finish. 4 pp., illus. Hope's Windows Inc., Jamestown, N. Y.*

LITERATURE REQUESTED

The following individuals and firms request manufacturers' literature:

R. E. Earnheart, Architect, 1810 Walker Ave., Kansas City, Mo.

W. H. Grant, Jr., Architect, 207 Waverly Way, Clarksburg, W. Va.

Christopher P. Kantianis, Architect, Springfield Natl. Bank Bldg., Springfield, Mass.

Sr. Aquiles Landoff, Arquitecto, Casilla 119, Vina del Mar, Chile.

Charles Melov, Architect, 439 Sevilla Ave., Coral Gables, Fla.

Modas a Exposicao-Clipper S/A, 39 Largo Santa Cecilia, Sao Paulo, Brazil.

Reynolds and Morrison, Associated Architects, Hightower Bldg., Oklahoma City 2, Okla.

School of Architecture, The University of Oklahoma, Norman, Okla.

Sherwood, Mills & Smith, Architects, 101 Park Ave., New York 17, N. Y.

Timber Structures, Inc., P.O. Box 3782, N.W. 29th & N.W. Yeon Ave., Portland 8, Ore., Attention Light Structures Division.

Macon G. Williams, Chief, Design Branch, Air Installations Division, Headquarters, Air Materiel Command, Wright Field, Dayton, Ohio.

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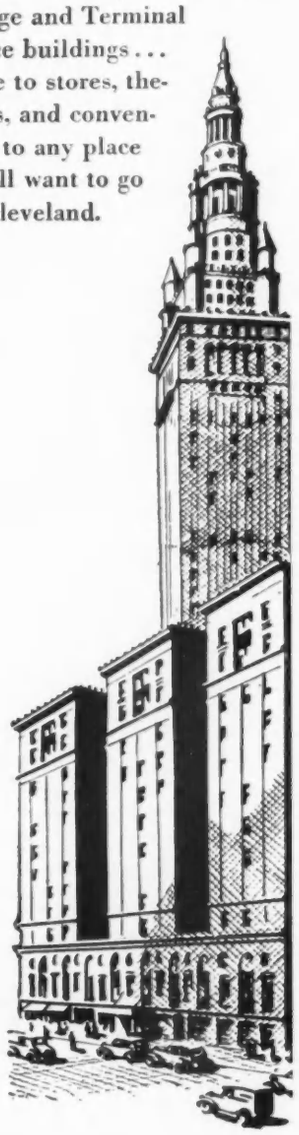

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